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Science and life

Практикум

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В настоящем учебно-методическом пособии представлены учебные материалы и практические задания по курсу «Английский язык». Учебно-методическое пособие включает тексты из доступных британских и американских периодических изданий, подробный словарь к каждому тексту, комплекс лексико – грамматических упражнений, контрольные вопросы и задания, список рекомендуемой литературы и Интернет-источников.

Учебно-методическое пособие предназначено для студентов второго курса очной формы обучения, обучающихся по направлению подготовки 03.03.03 «Радиофизика», 10.05.02 «Информационная безопасность телекоммуникационных систем», 10.05.02 «Фундаментальная информатика и информационные технологии».

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ВВЕДЕНИЕ

Методическое пособие «Science and life» предназначено для студентов второго курса бакалавриата очной формы обучения, изучающих английский язык в рамках общего курса, обучающихся по направлениям подготовки 03.03.03 «Радиофизика», 10.05.02 «Информационная безопасность телекоммуникационных систем», 02.03.02 «Фундаментальная информатика и информационный технологии»

Пособие имеет следующую структуру: каждый урок содержит текст на английском языке, подробный англо-русский словарь к тексту, комплекс лексико-грамматических упражнений, вопросы по тексту, упражнения на перевод.

Работа с пособием имеет цель – выработка у студентов умений и навыков, необходимых для работы с современными текстами на английском языке, расширение активного и пассивного словарного запаса, практического опыта в коммуникации современного уровня.

Пособие предназначено для обеспечения студентов учебными материалами для работы как в аудитории, так и дома, в часы, предназначенные учебной программой для самостоятельной работы.

Текущий контроль успеваемости производится на занятиях практического типа. Итоговый контроль осуществляется на экзамене.

Урок 1

1.1 Read and translate the text

Banning mobile phones in schools: beneficial or risky? Here's what the evidence says

Victorian education minister James Merlino's announcement mobile phones will be banned for all students at state primary and secondary schools. It is certainly a bold move.

The policy has been justified as a direct response to mounting levels of cyberbullying, concerns over distractions and schools struggling with discipline relating to students' misuse of phones.

Students will have to switch off their phones and store them in lockers from the start of the school day until the final bell. In case of an emergency, parents or guardians can reach their child by calling the school.

The minister said in a statement: "The only exception to the ban will be where students use phones to monitor health conditions, or where teachers instruct students to bring their phone for a particular classroom activity." Whether to allow student use of mobile phones in school is certainly a hot topic in education. The Victorian announcement follows a French government ban on mobiles in school in 2018. Debates on the issue are also taking place in Denmark, Sweden and the United Kingdom.

There is considerable public support for banning mobiles. In our recently conducted survey of more than 2,000 Australian adults, nearly 80% supported a ban on mobile phones in classrooms. Just under one-third supported an outright ban from schools altogether.

Support for a classroom ban was remarkably consistent across different demographics, including political affiliation and age group.

But while banning phones from classrooms, and from school altogether, might seem sensible, there are number of reasons to be cautious. It's clear we need to carefully consider how we want to make use of digital devices being brought into schools. But previous experience, such as in New York, suggests a blanket ban might introduce even more problems.

And the little research evidence that addresses the issue is mixed.

What's the evidence?

Reports of cyberbullying have clearly gone up among school-aged children and young people over the past ten years, but the nature and precedents of cyberbullying are complex.

Research suggests there is a large overlap between cyberbullying and traditional forms of bullying, which wouldn't then follow that digital devices are somehow causing these behaviours.

Cyberbullying also often takes place outside school hours and premises. There is a danger banning phones from classrooms might distract education staff from having to continue with efforts to address the more immediate causes of cyberbullying.

There is also a growing literature exploring the links between digital devices and classroom distractions. The presence of phones in the classroom is certainly found to be a source of multi-tasking among students of all ages – some of which can be educationally relevant and much of which might not.

But the impact of these off-task behaviours on student learning outcomes is difficult to determine. A review of 132 academic studies concluded, it is

difficult to determine directions and mechanisms of the causal relations between mobile phone multitasking and academic performance.

There is also a strong sense from classroom research that issues of distraction apply equally to laptops, iPads and other digital devices.

All told, the sense from academic literature is that the realities of smartphone use in classrooms are complex and decidedly messy. Our own research into how smartphones are being used in Victorian classrooms highlighted the difficulties teachers face in policing student use (what some teachers described as requiring “five minutes of firefighting” at the beginning of every lesson).

Despite this, we also found instances of students using smartphones for a range of beneficial purposes – from impromptu information seeking to live-streaming lessons for sick classmates.

These benefits are also reflected in classroom studies elsewhere in the world. Research from Stanford University has demonstrated, for instance, that with proper support and preparation, teachers in even the most challenging schools can “build on the ways students already use technology outside of school to help them learn in the classroom”.

There is now a whole academic field known as “m-Learning” where researchers have explored the pedagogical and learning advantages of using mobile devices (including phones) in lessons.

But what about a blanket ban from school altogether? Experience from elsewhere suggests enforcing a mobile ban in schools may not be as easy as it sounds.

What we can learn from others

The New South Wales government announced a review into the benefits and risks of mobile phone use in schools in June 2018, led by child psychologist Michael Carr-Gregg. At the review's completion,

the government said it would only ban mobile phones from the state's primary schools, leaving secondary schools free to make their own choice.

It noted

We recognise that technology plays an important and increasing role as students progress through their education [...] We want to give secondary schools the flexibility to balance the benefits and risks of technology in the way that best supports their students.

Perhaps the most pertinent example is the ban enforced in New York City from 2006, that was eventually lifted in 2015.

Mayor Bill de Blasio

Ending the cell phone ban in our schools is a common sense move that will make life easier for parents and students:

James Merlino

This was something I thought about long and hard. It won't be universally popular. But banning mobile phones at schools is the right thing to do. It will cut down on distraction in the classroom and cyber-bullying in the schoolyard.

Vocabulary

<p>bold move – смелый ход, смелый шаг locker – отдельный шкафчик outright ban – полный запрет altogether – вполне, всецело affiliation – принадлежность, объединение blanket ban – полный запрет overlap – совпадение premise – здание outside premises – снаружи зданий</p>	<p>learn outcomes – изучать результаты casual relations – причинно (следственные) связи messy – грязный, неупорядоченный impromptu – импровизированный build on – опираться на, использовать from elsewhere – из других источников, из других стран, из других мест the most pertinent examples – наиболее наглядные примеры</p>
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1.2 Find equivalents in the text

Электронные устройства, задирать (затравливать), правильная вещь, здравый смысл, здравый (правильный) поступок, сделать жизнь проще, уместный пример (подходящий пример), выгода, риск, преимущества, недостатки, уроки в он-лайн трансляции, импровизированная

информация, выделять причинно – следственные связи, учебная успеваемость, связь между электронными устройствами и отвлекаемостью в школе, вне зданий, предполагать, за последние 10 лет, изучать данные, запрещать мобильные телефоны в классах, полный запрет, проводить опрос, актуальная тема в образовании, положить телефон в шкафчик, с начала учебного дня и до его конца, беспокойство по поводу успеваемости, неправильное использование цифровых устройств.

1.3. Add prepositions if necessary

1. Mobiles will be banned _ secondary schools.
2. It is a direct response _ mounting level of cyberbullying.
3. The problem is relating _ students' misuse of phones.
4. The students will have to put their phones in lockers _ the start of the school _ the final bell.
5. _ case of an emergency parents can reach their child by calling _ the school.
6. It may be the only exception _ the ban.
7. The students may bring their phones _ particular class activities.
8. Debates _ the issue are to be organized.
9. There is considerable public support _ the ban. .
10. There is a large overlap _ cyberbullying and traditional forms of bullying.

1.4 Answer the following questions

1. Is the decision to ban mobile phones at state primary and secondary schools a bold move in Britain?
2. What is the reason for the ban? Is it a direct response to mounting level of cyberbullying, concerns over distractions and student's misuse of phones?
3. What new rule is to be set?
4. Where do students have to store their mobiles from the beginning of the school till the final bell?
5. How will parents be able to reach their child in case of an emergency?
6. What exception to the ban is possible?
7. Is there a considerable public support for the ban on mobiles at schools in Britain?
8. What does the previous experience such as in New York suggest?
9. Are there any links between digital devices and classroom distractions?
10. Is it possible to determine the casual relation between mobile phones and academic performance?
11. May mobile phones be used for a range of beneficial purposes at school?
12. Do you agree or disagree with some points of view below the text

1.5 Translate into English

Во Франции мобильные телефоны были запрещены в школах для всех учащихся младших и средних классов.

Это было прямым ответом на возрастающий уровень использования школьниками мобильных устройств для запугивания одноклассников и учителей, опасений по поводу отвлекающей от занятий роли данных устройств и связанного с этим падением уровня успеваемости.

Сейчас учащиеся обязаны выключать свои телефоны и оставлять их в специальных шкафчиках с начала учебного дня и до его завершения.

В стране существует значительная общественная поддержка всеми социальными группами этого смелого шага министерства образования.

Однако, есть несколько причин, чтобы быть осторожными, запрещая мобильные телефоны в школах. Так как их использование в школах может иметь не только недостатки, но и преимущества.

Наиболее показательные примеры – следующие: сотовые телефоны могут быть использованы на уроках для выполнения различных заданий; либо для организации трансляции уроков для учеников, отсутствующих по болезни.

Таким образом, тема запрещения мобильных устройств на уроках в школе остаётся «горячей» темой в образовании.

2.1 Read and translate the text

Drive my car

The driverless revolution could be trickier than we think

The future is driverless. Everyone says so. Late last year Phillip Hammond promised fully driverless cars on British road by 2021. Daimler pledged driverless cars by 2020, Ford by 2021. But commuters should not fantasise about watching Netflix with their feet on the dashboard on their drive to work just yet. The autonomous vehicle revolution may be further away than an over-excited tech cares to admit.

The truth is that the technology is proving trickier to develop than expected. In 2016 Elon Musk announced that “All Tesla cars being produced now have full self-driving hardware”. But the company still has not developed the software necessary for a car to complete a full self-driving trip. Tesla’s offering is more like an enhanced cruise control. Mr. Musk has promised that “a new summon mode” will enable your car to follow you around like a pet. That is a charming idea, but it is hardly a promised revolution.

Moreover the capabilities of the current crop of driverless cars are limited. Google’s Waymo is restricted to an easily navigable “geofenced” zone. Volvo is admitted that it is struggling to get its cars to recognize that baffling hopping motion of a kangaroo. Barring a security breach of London Zoo, this is not a problem that British driverless cars will encounter.

Giving enough time these problems are probably surmountable. However, a study by the management consultants Arthur D Little points to the more fundamental difficulty: driverless cars are programmed to obey the rules and not take risks for example when changing lanes. The study suggests that this could increase traffic jams by more than 16 per cent. Then there is the challenge posed by human behaviour.- no company would ever programme a car to run over civilians stepping into the road. This means pedestrians and cyclists will be able to run rings around them. On top of that the study suggests that availability of self-drive vehicles could result in fewer people taking public transport, resulting in 50 per cent increase in overall car use by the middle of the century.

Despite these gloomy predictions the quest for autonomous cars is set to continue. For executives at the ride-bailing service Uber, for example, driverless technology is a commercial imperative. The long term goal is to get people to give up car ownership and start relying entirely on Uber. For that to happen it needs to reduce the cost of an Uber ride, around £ 2.16 a mile now as close as possible to the cost of car ownership which it estimates to be around 69 p a mile. The only way that will happen, they say, is with driverless cars. Uber believes that commercial deployment of autonomous vehicles could be achieved in two to four years, and perhaps within ten years in London.

If Uber is right then Silicon Valley may not be the only winner. Larry Burns, former head of research and development at General Motors, predicts advantages for the ordinary citizen. He believes that an autonomous Uber-like driving service could almost eliminate car ownership and reduce the number of cars on the roads by 80 per cent. That would mean fewer traffic jams and less pollution. Perhaps one day such prediction will come to pass. But as long as the world's finest driving technology car be fooled by a kangaroo or careless pedestrians stepping out in front of cars. It is still probably not time to cancel your children's driving lessons.

Vocabulary

fully – полностью, всецело	gaffe – подкрадываться
tricky – сложный, хитрый, непростой	breach – нарушение, брешь, утечка, разрыв, расторжение
trickier – более сложно, более не просто	barring – запрещение
pledge – брать на себя обязательства	the problems are surmountable – проблемы преодолимы
commuter – пригородный	in overall – в общем, в целом
commuter airport – пригородный аэропорт	the quest for – стремление к, поиск
commuters – пассажиры	bail – спасти, взять на поруки, выручить
bunch of commuters – «кучка» пассажиров»	executives – руководители
dash – тире	ownership – собственность, владение
dashboard – приборная доска	fantasize about – фантазировать о
enhance – повысить, укрепить, активизировать, улучшить	autonomous vehicle – автономное транспортное средство
enhance the effectiveness – повысить эффективность	
summon – мобилизовать, призывать	
I will summon you once I have made my decision – Я позову Вас, когда я приму решение	

2.2 Find equivalents in the text

автомобили без водителей, обещать самоуправляемые автомобили к 2021 году, фантазировать о новых машинах, ноги на приборной доске по пути на работу, революция самоуправляемых транспортных средств, сложнее (чем ожидалось), оборудование для беспилотного движения автомобиля, обещанная революция, развивать программное обеспечение, блестящая идея, сталкиваться лицом к лицу, ограничивать, указывать на фундаментальные трудности, ограничивать правилами, менять полосу движения, вступать на проезжую часть, велосипедист, пешеход, рисковать, уменьшать стоимость поездки на Убер, чтобы это случилось – необходимо, оценивать, достигать в два года, уменьшать количество автомобильных пробок на дорогах и загрязнение воздуха

2.3 Add prepositions, if necessary

1. Daimler pledged driverless cars _ 2021.
2. He was seen _ his drive to work yesterday.
3. The study points _ more fundamental difficulty.
4. The cars are programmed _ obey and not take risks.
5. The study suggests that it could increase traffic jams _ more than 80 per cent.
6. Driverless cars will not be able to run _ civilians stepping _ the road.
7. Availability of self-drive vehicles could result _ fewer people taking public transport.
8. The result will be _ 50 per cent increase overall car use.
9. The quest _ autonomous cars is set to continue.
10. The long term goal is to get people to give up car ownership and start relying entirely _ Uber.
11. The goal will be achieved _ two years.

2.4 Answer the questions

1. Is future driverless? Who predicts it?
2. Do main car manufacturers promise fully autonomous vehicles on British roads by 2021?
3. Should commuters fantasize about feet on dashboard on their drive to work?
4. Is driverless revolution trickier than we think?
5. Have the companies developed software for fully autonomous driverless trip?
6. Are capabilities of modern driverless cars limited?
7. Can they drive and navigate only in special zones?

8. How can this problem be resolved? Is it surmountable?
9. Who points to the most fundamental difficulties? What are they?
10. Does human behavior contradict driverless cars development?
11. What is the long term goal of Uber executives?
12. When are Uber commercial driverless cars expected to be deployed in London?
13. Are there any advantages for ordinary citizens if it happens?

2.5 Translate into English

Ведущие мировые производители автомобилей предсказывают появление полностью автономных транспортных средств. Мерседес обещает появление автомобилей без водителя на дорогах Британии к 2021 году.

Но это оказалось сложнее, чем ожидалось. Так как разработчики такого рода автомобилей столкнулись с рядом трудностей.

В то время, как бортовое оборудование для автономной езды уже разработано, программное обеспечение ещё не готово. Кроме того, радиус действия таких машин ограничен «гео-зоной». И это не единственная проблема.

Специалисты указывают на самую фундаментальную проблему: такой автомобиль не может рисковать как человек при перестройке на другую полосу, он запрограммирован подчиняться правилам. Никто не будет программировать машину, чтобы она ехала на пешехода, если он ступил на проезжую часть.

Однако будущее автономных транспортных средств не так грустно. Например, руководители Убер считают, что развитие таких автомобилей – коммерческий императив. Долгосрочная цель – заставить людей отказаться от владения собственной машиной в пользу машин Убер без водителя.

Они считают, что для этого необходимо добиться снижения цены за милю. По их мнению, это проблема – решаемая.

Для простых граждан это означает снижение автомобильных пробок и меньшее загрязнение воздуха.

Но для решения этой задачи необходимо время.

Урок 3

3.1 Read and translate the texts

**'Hologram' lecturers to teach students at Imperial College London
University classes are set to be given a futuristic spin by letting lecturers
appear as hologram-like apparitions beamed in from afar.**

Imperial College London will show off the technology at a special event later on Thursday before deploying it more widely. It believes it will be the first academic body to do so regularly. A similar effect has been used to animate images of Michael Jackson, Elvis Presley and other celebrities.

Imperial will initially limit its use to its Business School's activities but expects the technology could eventually become common.

"The alternative is to use video-conferencing software but we believe these holograms have a much greater sense of presence," Dr David Lefevre, director of Imperial's Edtech Lab, told the BBC.

"The lecturers have a high-definition monitor in front of them which is calibrated so they can point at people and look them in the eye. They can really interact."

More than one person can also appear at a time.

Indeed, at the Women in Tech event on Thursday, a panel will feature two guests whose images will be transmitted from the US alongside a further two actually on stage. All four are expected to be able to intercommunicate.

On budget

Strictly speaking, the illusions are not holograms but neither are **they the Pepper's Ghost effect** used by politicians including French presidential candidate Jean-Luc Melenchon and India's Prime Minister Narendra Modi as well the entertainment industry.

Instead, they use a technique developed by a Canadian company, Arht Media.

"The problem with Pepper's Ghost is that it can be intricate to set up and can cost about £150,000 to run an event," said Dr Lefevre.

"This is simpler - you project upon a glass screen, and a backdrop behind it uses software to give it an illusion of depth.

"It runs at the low thousands each time, so for the first time universities can afford it."

To send their image, lecturers need to use a "capture studio", which involves filming them against a black backdrop while being lit from both sides.

Imperial plans to make use of two external studios - one in Los Angeles, the other Toronto - as well a portable kit to invite overseas-based guest speakers to give talks to its students.

In addition, it intends to use the equipment to let one of its lecturers give a presentation to a Spanish business school in February.

Beyond providing a less disruptive means of attracting foreign talent than flying them in, Imperial says there are other advantages.

A popular invitee can be beamed to several lecture halls simultaneously.

Talks can also be recorded and played back for later use, although this would rule out interactions with the audience.

The downside is there is less likelihood guests will stay around for a chat once their scheduled appearance ends. Plus there is always the risk of a technical hitch.

But Imperial believes the benefits should outweigh the drawbacks.

"It's going to be one of those technologies that gets used," Dr Lefevre said.

"So long as the technology works the way we believe it will, I can see this becoming fairly mainstream."

Additional text

Students to be taught by 'holograms' at Imperial College London

Business students at Imperial College London are set to be offered lectures led by "holographic professors" in a world first.

The holograms are able to engage with students in real-time, responding to reactions and taking questions via a camera link as if they were in the same room.

The technology was unveiled at an event in London on Thursday where 3D live images of speakers in Los Angeles and New York appeared on stage to talk about women in technology.

"Introducing hologram technology to the classroom will break down the limitations of traditional teaching by creating an interactive experience that benefits both students and academics," said Dr David Lefevre, director of the Edtech Lab at Imperial College Business School.

"Rather than replacing or reducing real-life lectures, the hologram technology will provide greater flexibility for academics by enabling them to continue teaching whilst traveling, ensuring consistency and quality for students."

Imperial is using technology developed by a Canadian company, Arht Media, whose board of advisors includes singer Michael Buble and television host Larry King.

The system works by projecting a live image onto a glass screen. An illusion of depth is then created using a backdrop.

So that they can interact with their audience, the lecturers are provided with a high-definition monitor which is set up so they can make eye contact with individuals.

The technology is designed to promote the university's business school and attract students who might otherwise be tempted by online courses that are a fraction of the cost. It also allows the university to invite international experts to speak at lecturers without having to fly them to the UK.

It will also make it possible for Imperial College Business School to host lectures in multiple classes and locations simultaneously.

"Investing in new technology is a vital part of our strategy to create more flexible and inspiring learning experiences for our students," said Professor Francisco Veloso, dean of Imperial College Business School.

"Being part of Imperial College London, we are keen to grow our digital visibility as a business school and the new hologram represents the pioneering work our Edtech Lab is undertaking in this area."

In September, Vodafone demonstrated how 5G mobile technology could be used to make live holographic calls in the near-future due to the improved mobile connection speeds it has the potential to offer.

Vocabulary

hologram – голограмма	panel – группа, жюри, форум, участники
holograph – подлинный	feature – черта
spin (span, spun) – прясть, прясти, сочинять (длинную историю), крутить	features – черты лица
this book is too much spun – книга слишком растянута	featureless – лишенный определённых черт
spinning jenny – старинная прялка дженни	alongside – рядом
appear – появляться	further – дальше
appearance – появление, вид, наружность	intercommunicate – взаимодействовать
beam – балка, перекладина, пучёк лучей	defy – определять
beamy – испускающий лучи	define – определённый
afar – далеко, издалека	definitive – определяющий
from afar – издалека	for a definite period – на определённый период
show (showed, shown) – показывать	definition – степень отчётливости очертаний
show off the technology – показывать технологию	ghost – призрак, приведение
showy – видный, эффектный	ghost effect – побочный эффект
show one's cards – открывать, показывать карты	intricate – запутанный
display it most widely – показать это наиболее широко	set up – устанавливать
	backdrop – фон
	light (lit, lit) – освещать
	project – проэкт, отображать
	run an event – управлять событием
	a portable kit – портативный набор

eventually – в конце концов	overseas – за рубежом
alternative – альтернатива, выбор	invitee – специально приглашенная персона
although – хотя	interact – взаимодействовать
urge – побуждать, заставлять	rule out – исключать
define priority – определить приоритет	
a high definition monitor – монитор с высоким разрешением	

3.2 Find equivalents in the text

Быть переданным лучами издалека, продемонстрировать технологию. на специальном мероприятии позднее, применять (развернуть) технологию шире, быть первым академическим учреждением (применившим данную технологию), подобный (такой же) эффект, ограничить применение технологии Бизнес школой, применение данной технологии станет впоследствии всеобщим, использовать программное обеспечение для организации видео-конференций, создавать (иметь) более сильное чувство присутствия, монитор высокой чёткости, перед собой, по-настоящему взаимодействовать, смотреть в глаза, появляться одновременно, в самом деле, ведущие передачи представляют двух гостей, быть переданным по трансляции из США, быть способным общаться.

Строго говоря, магический эффект (эффект фокуса), развлекательная индустрия, быть сложным для установки, проводить мероприятие.

Проецировать на стеклянный экран, фон сзади, освещать сбоку, внешняя студия, портативный набор, оборудование, привлекать зарубежные таланты, иметь преимущества, недостатки, взаимодействие с аудиторией.

Отрицательная сторона, включенные в расписание, риск технического сбоя, положительные стороны перевесят недостатки.

Быть способным взаимодействовать, отвечать на реакцию, через соединение с камерой, быть раскрытым (показанным), появиться на сцене, ломать пределы традиционного преподавания, замещать или уменьшать количество реальных лекций.

Обеспечивать большую гибкость, давать возможность преподавать во время поездки.

Быть созданным, спроектированным, продвигать школу бизнеса, привлекать студентов, в противном случае, быть привлечённым он-лайн курсами. приглашать иностранных лекторов. устраивать лекции одновременно во многих классах и местах, без необходимости лететь на самолёте в Соединённое Королевство.

Демонстрировать новую мобильную технологию, живые голографические звонки, в ближайшем будущем, иметь потенциал предложения.

3.3 Add prepositions if necessary

1. The College showed off the new technology _ a special event.
2. The College initially limited its use _ its Business School activities.
3. Lecturers will have high-definition monitors _ front of them.
4. More than one guest can appear _ a time.
5. A panel featured two guests _ the Women in Tech event on Thursday.
6. They used the technology developed _ a Canadian company.
7. They project _ a glass screen and a backdrop _ it uses software to give it an illusion of depth.
8. They film the guests _ a backdrop and light them from both sides.
9. They plan to make use _ two external studios.
10. A popular invitee can be beamed _ several halls simultaneously.
11. The holograms will be able to engage _ students in real time.
12. The lectures might continue to teach _ traveling.
13. We will make live holographic calls in the nearer future due _ the improved mobile connection.

3.4 Answer the questions

1. What new technology was shown off at Imperial College?
2. Was it done before deploying it widely?
3. Was the similar technology (effect) used to animate images of some celebrities?
4. Does Imperial College expect this technology to become common?
5. Why does the College prefer using the hologram technology instead of its alternative (video-conferencing software)?
6. How can lectures interact with the audience using the hologram technology?
7. How many “hologram” persons can appear at a time on the stage?
8. What will happen at the Women in Tech event on Thursday?
9. What is the difference between the hologram technology used by Imperial College and the Pepper’s Ghost effect used by several politicians and the entertainment industry?
10. How does the external “capture” studio work?
11. What are the additional studios and a portable kit used for?
12. What are the other advantages of the hologram technology?
13. Does Imperial College believe that the benefits outweigh the drawbacks? Is it becoming fairly mainstream?

3.5 Translate the text into English

Империял Колледж в Лондоне собирается продемонстрировать новую технологию – использование голограммы для демонстрации лекций в

классах. Колледж является первым академическим учебным заведением, собирающимся применять эту технологию регулярно.

Руководство колледжа считает, что данная технология лучше, чем использование вольтеров в режиме видео-конференций. Она обладает большей достоверностью.

По сравнению с технологиями, уже используемыми некоторыми политиками и индустрией развлечений (например, для демонстрации знаменитостей) данная технология удобнее для применения.

Техническая сторона дела следующая: изображение снимается на чёрном фоне с дополнительной подсветкой с обеих сторон в специальной студии. Изображение одного и того же лектора может появляться одновременно, например, в пяти разных залах. Во время прямой трансляции возможно взаимодействие лектора и аудитории. В студии перед лектором находится монитор высокой четкости, настроенный специально так, чтобы он мог смотреть прямо на зрителей и, таким образом, поддерживать прямой зрительный контакт как со всей аудиторией, так и с отдельными студентами.

Декан Школы бизнеса Империял Коллдж сказал в интервью ВВС, что голограммные лекции были разработаны для продвижения школы и привлечения студентов, которые, в противном случае могли бы заинтересоваться он-лайн курсами. Это также позволяет приглашать иностранных лекторов без необходимости для них лететь в Соединённое Королевство.

В Империял Колледж уверены, что данная технология станет всеобщей.

В тоже время, компания Водафон уже продемонстрировала в сентябре этого года возможность живых голограммных звонков, которые будут доступны в ближайшем будущем благодаря улучшенной скоростной мобильной связи.

Голограммные технологии могут иметь широкое применение.

Урок 4

4.1 Read and translate the texts

Artificial Intelligence and the Future of Humans

Digital life is augmenting human capacities and disrupting eons-old human activities. Code-driven systems have spread to more than half of the world's inhabitants in ambient information and connectivity, offering previously unimagined opportunities and unprecedented threats. As emerging algorithm-driven artificial intelligence (AI) continues to spread, will people be better off than they are today?

Some 979 technology pioneers, innovators, developers, business and policy leaders, researchers and activists answered this question in a canvassing of experts conducted in the summer of 2018.

The experts predicted networked artificial intelligence will amplify human effectiveness but also threaten human autonomy, agency and capabilities. They spoke of the wide-ranging possibilities; that computers might match or even exceed human intelligence and capabilities on tasks such as complex decision-making, reasoning and learning, sophisticated analytics and pattern recognition, visual acuity, speech recognition and language translation. They said “smart” systems in communities, in vehicles, in buildings and utilities, on farms and in business processes will save time, money and lives and offer opportunities for individuals to enjoy a more-customized future.

Many focused their optimistic remarks on health care and the many possible applications of AI in diagnosing and treating patients or helping senior citizens live fuller and healthier lives. They were also enthusiastic about AI's role in contributing to broad public-health programs built around massive amounts of data that may be captured in the coming years about everything from personal genomes to nutrition. Additionally, a number of these experts predicted that AI would abet long-anticipated changes in formal and informal education systems.

Yet, most experts, regardless of whether they are optimistic or not, expressed concerns about the long-term impact of these new tools on the essential elements of being human. All respondents in this non-scientific canvassing were asked to elaborate on why they felt AI would leave people better off or not. Many shared deep worries, and many also suggested pathways toward solutions. The main themes they sounded about threats and remedies are outlined in the accompanying table.

From Your Mouth to Your Screen, Transcribing Takes the Next Step

LOS ALTOS, Calif. — Sam Liang longs for his mother and wishes he could recapture the things she told him when he was in high school.

“I really miss her,” he said of her death in 2001. “Those were precious lifetime moments.”

Mr. Liang, who is the chief executive and co-founder of Otter.ai, a Silicon Valley start-up, has set out to do something about that in the future. His company offers a service that automatically transcribes speech with high enough accuracy that it is gaining popularity with journalists, students, podcasters and corporate workers.

Improvements in software technology have made automatic speech transcription possible. By capturing vast quantities of human speech, neural network programs can be trained to recognize spoken language with accuracy rates that in the best circumstances approach 95 percent. Coupled with the plunging cost of storing data, it is now possible to use human language in ways that were unthinkable just a few years ago.

Mr. Liang, a Stanford-educated electrical engineer who was a member of the original team that designed Google Maps, said that data compression had made it possible to capture the speech conversation of a person’s entire life in just two terabytes of information — compact enough to fit on storage devices that cost less than \$50.

The rapid improvement in speech recognition technology, which over the past decade has given rise to virtual speech assistants such as Apple’s Siri, Amazon’s Alexa, Google Voice, Microsoft Cortana and others, is spilling into new areas that are beginning to have a significant impact on the workplace.

These consumer speech portals have already raised extensive new privacy concerns. “Computers have a much greater ability to organize, access and evaluate human communications than do people,” said Marc Rotenberg, the president and executive director of the Electronic Privacy Information Center in Washington. In 2015, the group filed a complaint with the Federal Trade Commission against Samsung, arguing that the capture and storage of conversations by their smart TVs was a new threat to privacy. Speech transcription potentially pushes traditional privacy concerns into new arenas both at home and work, he said.

It will almost certainly pose new privacy questions for corporations. Mr. Liang said that companies were interested in capturing all of the conversations of employees, including what goes on around the water cooler.

“This is the power of this new knowledge base for the enterprise,” he said. “They recognize that people spend so many hours every day in meetings, they want to understand how the ideas move around and how people actually talk to each other.”

Vocabulary

enact – предписывать, постановлять	wide-ranging – широкомасштабный
make society better off – делать общество лучше (делать жизнь людей)	exceed human intelligence – превосходить человеческий

лучше) over the next decade – в течении следующего десятилетия exercise free will – проявлять свободу воли augment human capacities – увеличивать способности disrupt – разрывать, нарушать cons – минусы, недостатки, против There are cons and you know it. – Есть минусы и ты их знаешь. ambient – окружающий connectivity – связь spread (spread, spread) – распространя(ся) unprecedented threats – беспрецедентные угрозы algorithm – алгоритм canvass – опросить, опрашивать We should canvass the area, though a lot of homeless around there. – Мы должны провести опрос на этой территории, хотя там и много бездомных.	интеллект utility – полезность, целесообразность utilities – коммунальные услуги match – подходить (по теме, форме, содержанию, и т. д.) customize – настраивать, адаптировать customized – специализированный, адаптированный genome – геном abet – содействовать, подстрекать abet marriage – побуждать, подстрекать к браку regardless – несмотря на regardless their prewar place of residence – несмотря на их довоенное место жительства outline – набросок plunge into despair – погружать в отчаяние storing data – размещение данных
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4.2 Find the equivalents in the text

Улучшать жизнь людей, в течении следующего десятилетия, сомнения (тревоги), выражать свободу воли, увеличивать человеческие возможности, распространя(ся), ранее немислимые возможности, беспрецедентные угрозы, искусственный интеллект, управляемый алгоритмом.

Опрашивать экспертов, предсказывать, увеличивать человеческую эффективность, угрожать человеческой автономии, широкие возможности, превосходить человеческий интеллект, превосходить в выполнении заданий, сложное принятие решений, убеждение, обучение, сложный анализ, распознавание по образцу, распознавание речи, экономия времени и денег, спасти жизни.

Сфокусировать(ся) на заботе о здоровье, диагностировать, лечить, быть полным оптимизма, способствовать чему-то, большие объёмы данных, собирать в течении лет, гены, питание, провоцировать (подстрекать) к давно предполагаемым изменениям.

Несмотря на, выражать опасения, разделять чувства, глубокие опасения, предлагать пути к решению, быть представленным в сопутствующей таблице.

Улучшения, решать что-то сделать, автоматическое транскрибирование речи, с достаточной аккуратностью, быть натренированным, распознавать устную речь, вместе с уменьшением стоимости хранения информации, сжатие данных, быть подходящим для хранения на накопительных устройствах, просачиваться в новые области.

4.3 Add prepositions if necessary

1. Many people have concerns _ how artificial intelligence will affect human life.
2. Computers may exceed human capabilities _ many tasks.
3. “Smart” systems in vehicles, in buildings, _ farms and I _ business will save money and time.
4. People will enjoy _ more customized future.
5. Many focused their optimistic remarks _ health care.
6. They are also enthusiastic _ AI’s role in public health programs.
7. Many experts express concerns _ the long-term impact of the new tools.
8. They also suggest pathways _ solutions.
9. The main themes were outlined _ accompanying table.
10. It will have a significant impact _ the work place.
11. Mr. Liang has set out _ do something about it in the future.
12. The new service is gaining popularity _ students and corporate workers.
13. It was done _ the best circumstances.
14. It is compact enough to fit _ storage devices.
15. The rapid improvement in speech recognition _ the next decade.
16. The group filed a complaint _ the Federal Trade Commission _ Samsung.

4.4 Answer the following questions

1. Who says that rise of artificial intelligence over the next decade will make most people better off?
2. Why do many have concerns about how advances in AI will affect human life?
3. Will advances in AI lead to augmenting of human capacities?
4. What new possibilities and threats are being offered by advances in AI?
5. Who was canvassed in the summer of 2018?
6. What did the experts predict because of the rise of artificial intelligence?
7. Are “smart” systems really useful?
8. Why are many optimistic and enthusiastic about the role of AI?
9. Are the essential elements of being human in danger because of advances in AI?

10. What impact on the workplace do enhanced automatic transcribing have?
11. Why is automatic transcribing gaining popularity with students and corporate workers?
12. What do computers do better than people?
13. Why was a complaint filed with the Federal Trade Commission against Samsung?
14. Why were “Smart” Samsung TV considered a threat to the privacy?

4.5 Translate into Russian

Эксперты говорят, что развитие искусственного интеллекта сделает жизнь людей лучше в следующем десятилетии. Но многие высказывают опасения, что это затронет основы человеческой жизни.

Искусственный интеллект предлагает ранее невысказанные возможности, и в это же время, создаёт беспрецедентные угрозы.

Летом 2018 года было опрошено около тысячи людей (исследователей, изобретателей, бизнесменов и т. д.).

Многие говорят, что компьютеры могут справляться в некоторыми задачами лучше, чем люди. Это решение сложных задач, распознавание речи, языковой перевод... Умные системы помогают экономить деньги и время, спасать жизни.

Многие полны энтузиазма по поводу полезности искусственного интеллекта в здравоохранении. Он может применяться в диагностировании, лечении, помогать пожилым людям жить более полной и здоровой жизнью,

Искусственный интеллект способен собирать и анализировать большие объёмы данных от геномов до питания..

Также он может спровоцировать давно предполагаемые изменения в образовании

Урок 5

5.1 Read and translate the text

Automated transcription

The rapid advances being made in the automated transcription market in the past year show striking near-term potential in a growing array of new applications. This fall, for example, at the University of California, Los Angeles, students on campus who require assistance in note taking, such as those who are hearing-impaired, are being equipped with the Otter.ai service. The system is designed to replace the current note-taking process where other students take notes during classes and then share them.

In May, when the former first lady, Michelle Obama, visited campus as part of a student signing day celebration, deaf students were given access to a instantaneous transcription of her speech generated by the transcription service.

Zoom, the maker of a web-based video conferencing system, offers a transcription option powered by the Otter.ai service that makes it possible to instantaneously capture a transcript of a business meeting that can be stored and searched online. One of the features that is offered by Otter.ai and other companies is the ability to easily separate and then label different speakers in a single transcription.

Companies such as Rev, which began in 2010 using temporary workers to offer transcription for \$1 a minute, offers an additional automated speech transcription service for 10 cents a minute. As a result, transcription is pushing into a variety of new areas, including captioning for YouTube channels, corporate training videos and market research firms who need transcripts from focus groups.

The Rev system allows the customer to choose whether they want more accuracy or a quicker turnaround at lower cost, said Jason Chicola, the company's founder and chief executive. Increasingly, his customers will correct machine-generated texts rather than transcribing from scratch. He said that while Rev had 40,000 human transcribers, he did not believe that automated transcription would decimate his work force. "Humans and machines will work together for the foreseeable future," he said.

Nevertheless, speech technologies are having an undeniable impact on the structure of corporations.

"We have chatbots that are running live in production, and they are deflecting a lot of service cases," said Richard Socher, the chief scientist at Salesforce, a cloud-based software company. "In large service organizations, with thousands of people, if you can automate 5 percent of password reset requests, it's a big impact on that organization."

In the medical field, automated transcription is being used to change the way doctors take notes. In recent years, electronic health record systems became part of

a routine office visit, and doctors were criticized for looking at their screens and typing rather than maintaining eye contact with patients. Now, several health start-ups are offering transcription services that capture text and potentially video in the examining room and use a remote human transcriber, or scribe, to edit the automated text and produce a “structured” set of notes from the patient visit.

One of the companies, Robin Healthcare, based in Berkeley, Calif., records office visits with an automated speech transcription system that is then annotated by a staff of human “scribes” who work in the United States, according to Noah Auerhahn, the company’s chief executive. Most of the scribes are pre-med students who listen to the doctor’s conversation, then produce a finished record within two hours of the patient’s visit. The Robin Healthcare system is being used at the University of California, San Francisco, and at Duke University.

A competitor, DeepScribe, also based in Berkeley, takes a more automated approach to generating electronic health records. The firm uses several speech engines from large technology companies like Google and IBM to record the conversation and creates a summary of the examination that is checked by a human. By relying more on speech automation, DeepScribe is able to offer a less expensive service, said Akilesh Babu, the company’s chief executive.

In the past, human speech transcription has largely been limited to the legal and medical fields. This year, the cost of automated transcription has collapsed as rival start-up firms have competed for a rapidly growing market. Companies such as Otter.ai and Descript, a rival San Francisco-based start-up started by the Groupon founder Andrew Mason, are giving away basic transcription services and focusing on charging for subscriptions that offer enhanced features.

An example of this new functionality is an announcement that Descript made in September of a web-based service intended to permit podcasters to edit audio and video just as they would edit text in a word processor. In the past, audio and video editing have required special skills and software. Now, Descript is hoping to open audio and video editing to a more general audience, Mr. Mason said.

“Automatic transcription was becoming accurate enough and cheap enough that it was actually kind of usable,” he said. “We thought, gosh, wouldn’t it be cool to just build an audio editor that works like a word processor. We floated this idea by some of our producer friends, and they were all like, ‘Well, duh, yeah, we had that idea 20 years ago, when are you guys going to do that?’”

Speech scientists emphasize that while the automated transcription systems are significantly improved, they are still far from perfect. While 95 percent accuracy may be obtained by automated transcription, it is possible only under the best circumstances. An accent, a poorly positioned microphone or background noise can cause accuracy to fall.

The hope for the future is the emergence of another speech technology known as natural language processing, which tries to capture the meaning of words and sentences that will increase computer accuracy to human levels. But for now,

natural language processing still remains one of the most challenging frontiers in the field of artificial intelligence.

Christopher Manning, a Stanford University computer scientist who specializes in natural language processing, addressed the issue during a recent speech in San Jose, Calif.

“There is still so much that computers can’t do that humans do effortlessly that I’m absolutely certain that I won’t have to find a new field before I retire,” he said.

Vocabulary

great array of new applications – большой набор новых приложений	automated transcription would decimate his work force – автоматическая транскрипция уменьшит рабочий потенциал в десять раз
require – требовать,	foresee – предвидеть
require assistance in note taking – требовать помощи в создании конспектов	foreseeable future – предполагаемое будущее
be hearing – impaired – быть полуглухим (иметь проблемы со слухом)	engine – мотор, устройство
a student singing day celebration – День посвящения в студенты	collapse – разрушение
instant – мгновение	the cost has collapsed – стоимость «обрушилась»
instantaneous – мгновенный	intend – намереваться
instantly – мгновенно	emphasize – делать ударение
a quick turnaround – быстрый оборот	permit – письменное разрешение
scratch – царапина, царапать, записывать небрежно	permit – разрешать
	float – плавать, свободно скользить

5.2 Find equivalents in the text

Быстрое развитие автоматической транскрипции, продемонстрировать потрясающий потенциал, нуждаться в помощи для записи лекций, иметь повреждения слуха, быть снабженным, заменить существующий процесс записи.

Моментальная транскрипция речи, хранение информации онлайн, искать информацию онлайн, черта (особенность), способность отличать отдельных участников разговора и разделять их в транскрипции.

Применять транскрипцию в различных областях, референтные группы в маркетинге,

Текст создаётся машиной, в обозримом будущем, печатать, применять автоматизированный подход.

Конкурировать за быстрорастущий рынок, намереваться разрушить, требовать специальных умений и программного обеспечения, редактировать, быть возможным только в лучших условиях.

5.3 Add prepositions if necessary

1. Some students require assistance _ note taking.
2. They are equipped _ a special transcription service.
3. As a result, transcription is pushing _ variety of new areas.
4. They need a quick turnout _ a lower cost.
5. Human and machines will work together _ the foreseeable future.
6. Nevertheless, speech technologies are having an undeniable impact _ the structure of organizations.
7. _ recent years electronic health record systems becomes a part of a routine office visit.
8. The conversation is recorded _ a machine and checked _ a human.
9. In the past human speech translation has been limited _ the legal and medical fields.
10. It is possible only _ the best circumstances.
11. The companies compete _ a rapidly growing market.
12. They are focusing _ changing.
13. _ the past editing required special skills and software.

5.4 Answer the questions

1. What was Otter. ai service designed for?
2. What companies offer automated transcription, its storage and searching online?
3. Why is transcription pushing into a variety of new areas?
4. Who does not believe that automated transcription would decimate human work force?
5. Are speech technologies having an undeniable impact on the structure of corporations?
6. How is automated transcription used in medical field?
7. Does the cost of automated transcription influence the situation in general?
8. What are other fields where automated transcription may be used?
9. Are transcription systems far from being perfect?
10. What does Christopher Manning think about the future of automated transcription systems?

5.5 Translate into English

Быстрое развитие автоматической транскрипции за последние годы привело к появлению новых приложений. Одно из них разработано для

замены обычного процесса записи лекций автоматическим транскрибированием. Это может помочь слабослышащим и глухим студентам.

Другие приложения умеют различать отдельных участников разговора и выделять их, составляя транскрипцию.

Стоимость автоматической транскрипции упала, поэтому её сейчас используют во многих областях, Например, например, в маркетинге для записи опроса референтной группы.

Также, развитие автоматической транскрипции имеет неоспоримый эффект на структуру корпораций.

А в медицине автоматическое транскрибирование позволяет доктору поддерживать зрительный контакт с пациентом во время визита пациента. Затем доктор может просмотреть и ввести необходимые изменения в записи.

В целом, автоматическое транскрибирование – это быстро растущий рынок. Но сейчас ещё транскрипция зависит от условий, в которых она проходит. Посторонний шум или разговор может сильно ухудшить её качество.

Урок 6

6.1 Read and translate the text

What are popular uses of drones?

On a bright sunny day in the August of 1849, the streets of Venice were crowded with happy faces celebrating Festa della Madonna della Salute. The revelers had little idea that soon, the sky above them would not only put an end to the festivities, but would also lead to their country's surrender to Austria. For the first time in the history of wars, pilotless hot air balloons were used to drop bombs in the enemy territory. The technology was further developed after World War I and came to be known as drones several years later.

Thanks to their ability to reach inaccessible places, over the years, the use of drones in search and rescue operations, mapping and surveying, and in other civil applications such as policing and firefighting, has only multiplied. The exponential growth of unmanned aerial vehicles (UAVs), for drones as they are popularly called can be gauged from studies that predict the emerging global market for business services using drones to be worth over \$125 billion in future.

Sky is the limit

Today, the application areas of drones are limitless. The technology that was once designed to destroy is now being used for the betterment of mankind. From wildlife conservation to disease control, emergency response, insurance to mapping, UAVs are being used in multiple sectors. Lauren K. Venin, Landscape Architect at Dresdner Robin, says, "The ability to safely and quickly gather data and to access inaccessible locations opens a world of possibilities for of drones use. Their ability to thoroughly and accurately map natural features while minimizing human trespass may lead to better understanding of ecologically fragile areas."

Drones help in monitoring the number of animals, identifying spices and collecting samples allowing conservationists to track poachers

Venin, who is also a Floodplain Manager and community volunteer, sees great potential in UAVs for emergency management agencies to assess damage in the wake of a natural disaster. Dresdner Robin based out of New Jersey has been using UAVs to provide critical data on river conditions to flood-prone communities. For one of its recent projects, the company reviewed Pompton Lakes' flood-prone waterways by using 11 individual flights 215 feet above the water level. The drones moved at 10mi/h, using a 15-millimeter fixed-zoom lens, capturing 60 feet sections of the terrain. Images were snapped every two seconds (1,042 in total) and were later analyzed to locate obstructions in the river channel. These pictures aided a stream-cleaning project that is part of the borough's flood mitigation program.

Another area in which drones are increasingly being used is the fight against deforestation. A good example of this can be found in remote fields in the south of Yangon, where mangrove saplings were planted by drones, exhibiting the ability of the technology to restore forests. Biocarbon Engineering, a startup that makes drones to plant trees and grasses, took up the initiative. The company has also planted trees at abandoned mines in Australia and in other parts of the world. In Myanmar, it is working with a non-profit organization called Worldview International Foundation. For plantation, drones are first flown over an area to map it and collect information about the topography and soil condition so that it can be combined with satellite data and analyzed to determine the best locations to plant seeds. Once the surveying is done, drones fire biodegradable pods filled with germinated seeds and nutrients into the ground.

Drones in agriculture are used for soil and field analysis, planting, crop spraying, crop monitoring, irrigation and plant health assessment

Dr Subhash Ashutosh, Director General of Forest Survey of India (FSI), which comes under the Ministry of Environment, Forests and Climate Change, says drone is a new technological addition to their data acquisition and collection methodology, and that FSI has been using UAVs for survey and demarcation of R&D applications in species identification. FSI deploys drones fitted with multispectral high-resolution cameras so that the algorithm for species identification can be used in an automated manner. Dr Ashutosh adds that soon after FSI started using the technology, several other departments picked it up for mapping and surveying.

Similarly, HESOFF, a project implemented in cooperation with the Institute of Aviation, Warsaw and the Forest Research Institute, Sekocin Stary, uses drones for forest health assessment. The project is co-financed by European Commission and the National Fund for Environmental Protection and Water Management.

Marcin Spiralski, a GIS and teledetection specialist at the Institute of Aviation, Poland, says that they are using fixed-wing drones to monitor forest health and drought possibility. “We use fixed-wing UAVs with multispectral six band camera for advance analysis for orthophoto maps with near infrared channels up to 1000 meters to review forest condition,” he says.

Agriculture is another sector where drones are completely changing the way operations are carried out. Jovan Parusic, head of Business Development and Marketing, Agremo, a drone company based in Belgrade, Serbia says, “Drones have a development story of growing from a toy to a life-saving tool. In agriculture, they will soon become as important as tractors. Drones can help in sprouting and monitoring crops, and can scale up the production and bring down costs.” Drones can be employed for innovative rule-based reasoning to accurately count plants and determine stands from different angle orientation. They can help assess, prevent and correct crop damage throughout the season by routine monitoring and early detection. Ira Devir, CEO of Agrowing, based in Israel, agrees with Pursaic. Devir says, “The world is hungry and it needs food. The best

way to cut down on crop losses is through early detection of plant diseases. This is where drones can be of great use.”

Rajiv Sharma, President of 5th Dimension Technologies, headquartered in Hyderabad that uses drones for collecting, analyzing and delivering information that transforms how businesses make decisions, points out, “Drones have many applications, some of which we have not yet imagined. UAVs are starting to replace hazardous works such as climbing tall structures, inspecting confined areas and traversing dangerous terrains. They are helping save lives during search and rescue efforts and are optimizing energy production and delivery.” Sharma believes that in future, drones will be used to transport people and goods to hard-to-reach areas, delivering life changing access to healthcare and technology all over the world. UPS and autonomous drone technology firm Matternet has already started doing that. The company has been experimenting with medical deliveries using drones (Matternet’s M2 quadcopters) to WakeMed hospital in Raleigh, North Carolina. The effort is the result of the FAA’s Unmanned Aircraft System Integration Pilot Program, a three-year project set up to test the safe integration of drone technologies into commercial airspace.

Most preferred choice

Drones have become an eye in the sky to give us the view from above. They provide real-time, high-resolution imagery at a very low cost. Drone data is more likely to result in correct measurements in the first time, vastly reducing the time and cost of repeat site visits. Darshan Divakaran, UAS Program Engineer, North Carolina Department of Transportation, Division of Aviation, says, “Satellite imagery has played a pivotal role for almost two decades now. But, it has several limitations concerning cost, data sharing and time. In contrast, drones can capture aerial imagery at a far higher resolution, more quickly and at a much lower cost. And unlike satellites, people can own drones. UAVs also have real-time streaming capabilities that enable quick decision-making.”

UAVs help in assessing damage, locating victims and delivering aid in disaster-hit areas.

With miniaturization of sensors, it has now become easy to capture imagery using drones. The advancement in sensors has two primary impacts: data quality and automation.

Vocabulary

betterment of mankind – улучшение человечества	sapless – худосочный, истощенный
revel – пировать	sapling – молодое дерево
revelry – пиршество	mangrove sapling – молодое мангровое дерево
put an end to the festivities – покончить с праздностью	exhibit – выставлять, показывать
mitigate – смягчать	
surrender – сдача, отказ, сдавать,	

<p>сдаваться, отказываться от надежд further – дальше enquire further – распросить поподробнее food – наводнение the Flood – Великий Потоп (рел.) exponent – экспонат, образец exponential – показательный exponential growth – показательный рост to be worth over 125 millions – стоить свыше 125 миллионов gauge – мера, масштаб, калибр, точно измерить thorough – through no thoroughfare – проезд запрещён a policy of thorough – прямолинейная политика trespass – незаконно ступить на чужую землю, причинять ущерб имуществу, грех, преступление prone – лежащий ничком, предрасположенный (к чему-то) prone to anger – расположенный к гнуву poacher – браконьер track poachers – отслеживать браконьеров mangrove – мангровое дерево (тропическое побережье) sap – сок, сапёрная работа sapper – сапёр sappy – сочный wake – след корабля, кильватер in the wake of – по следам</p>	<p>exhibition – выставка take up – поднимать, принимать пассажира, браться за (что-то) pod – стручок, кожура, шелуха biodegradable pods – биоразрушающаяся оболочка degrade – понижать pick up – подбирать, собирать pick off – вырывать implement – орудие, инструмент, приводить в исполнение договор carry out – доводить до конца, выполнять to carry out the operation – доводить до конца операцию sprout – пускать ростки, расти sprouting and monitoring crops – растущий и наблюдаемый урожай scale – чешуя, снимать чешую scales – весы it can scale up the prediction – оценивать предсказание bring down cost – понижать цену throughout – насквозь, во всех отношениях, повсюду throughout the season – весь сезон hazard – азарт, риск hazardous work – рискованная (опасная) работа confine – ограничивать confined areas – ограниченные территории</p>
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6.2 Find the equivalents in the text

Взглянуть на, пирующие, беспилотные воздушные шары, вражеская территория, технология была в дальнейшем развита, способность достигать недостижимые места, поисковые и спасательные операции, создание карт и наблюдение, борьба с огнём, другие гражданские области применения

дронов, популярность может быть измерена, глобальный рынок, использование дронов оценивается более чем в 125 миллиардов долларов.

Область применения дронов безгранична, способность надёжно и быстро собирать данные, открывать мир возможностей для использования дронов, дрон – беспилотное воздушное транспортное средство, минимизировать человеческий ущерб, лучшее понимание экологически хрупких областей.

Следить за животными, идентифицировать виды, отслеживать браконьеров.

Видеть большой потенциал дронов для помощи в чрезвычайных ситуациях природного характера, отслеживать состояние рек в зонах потенциального затопления, линзы для захвата большей части территории.

Борьба против лесопотерь, быть посаженным дронами, восстанавливать леса, брать на себя инициативу, некоммерческая организация, состояние почвы, комбинировать с информацией со спутников, сажать семена, прорастающие семена, удобрения, поливка урожая, оценка здоровья растений.

Быть оборудованным камерой высокого разрешения, использовать автоматически, применять в кооперации, возможность засухи, дрон с фиксированным крылом, проводить до конца операции, вырастать из игрушки в инструмент для спасения жизни, в течение всего сезона, уменьшать потери урожая путём раннего определения болезни растения.

Рискованные работы, взбираться на высокие объекты, инспектировать огромные территории, пересекать опасные территории, труднодоступные территории, изменить доступ к медицинскому обеспечению и технологиям во всём мире.

6.3 Add prepositions if necessary

1. Drones are being used _ multiple sectors.
2. Drones help _ monitoring the number of animals and tracking poachers.
3. The specialists see great potential _ drones _ management agencies to assess damage _ the wake of a natural disaster.
4. Drones are increasingly being used in the fight _ deforestation.
5. In the south of Yangon mangrove saplings were planted _ drones.
6. The algorithm for animals identification can be used _ an automated manner.
7. The project was implemented _ cooperation with the Institute of Aviation.
8. Drones will change access to health care and technologies all _ the world.

6.4 Answer the questions

1. Where were drones used for a first time? How did they look like? What mission did they carry out?

2. UAV. What does it mean? What application does it have?
3. How may the popularity of drones be gauged? What do studies predict for drones?
4. The applications of drones are limited? What are they?
5. How do the UAVs contribute to better understanding of ecologically fragile areas?
6. Should poachers be afraid of UAVs?
7. How are drones useful in assessing damage in the wake of a natural disasters and providing critical data on river conditions to food-prone communities?
8. What cameras are drones equipped with?
9. Are drones useful in the fight against deforestation?
10. How can satellite data be combined with drone data? What is the purpose?
11. How are drones used for forest health assessment and drought possibility?
12. Are drones changing completely carrying out operations in agriculture?
13. Are UAVs starting to replace hazardous works such as climbing tall structures, inspecting confined areas and traversing dangerous terrains?
14. Will drones be used to transport people and be good for hard-to-reach areas?
15. Will drones change access to health care and technology all over the world?
16. What is better: collecting data by a satellite or by a drone? Tell about advantages and disadvantages.

6.5 Translate into English

UAV. Данная аббревиатура означает беспилотное воздушное транспортное средство. Впервые оно было применено в военных целях против Венеции Австрией в 1849 году. На людей, отмечающих праздник на улице города, с беспилотных воздушных шаров были сброшены бомбы.

В данное время дроны применяются в гражданских и военных целях. Популярность дронов может быть оценена из исследований.

Возможности дронов безграничны. Они могут достигать труднодоступные территории и собирать данные. Они помогают понять лучше экологию районов, уменьшить ущерб.

Дроны могут наблюдать за количеством животных, определять из виды, отслеживать браконьеров.

Они применяются для оценки ущерба, случившегося в результате природных катастроф. Способны обеспечивать данные о состоянии рек в районах возможного затопления.

Современные дроны оборудованы камерами со специальными линзами, которые делают моментальные снимки каждые две секунды на больших территориях.

Беспилотные воздушные транспортные средства играют большую роль в борьбе против гибели лесов. Они применяются для восстановления леса, сажают деревья и траву в труднодоступных районах, могут поливать урожай и оценивать здоровье растений.

В сельских хозяйствах они станут такими же необходимыми, как трактора.

Дроны будут перевозить людей и грузы в труднодоступные места. Они изменят доступ к медицинским услугам и технологиям во всём мире.

Урок 7

7.1 Read and translate the text

Drones shaping the future of war

A retired Navy captain explains how drones will shape the future of war
Still no answer on the question of autonomous weapons

There used to be a fairly stable tradition of war, says John E. Jackson, a retired Navy captain and professor at the Naval War College. But drones have changed everything.

“It used to be that a warrior prepares, trains, deploys to a foreign location where he is face-to-face with an enemy, he may or may not survive, and at the end, he comes home,” says Jackson. Now, pilots can leave their homes in Las Vegas, drive to the Creech Air Force Base, are “at war” for eight to 10 hours, and then come home. “It’s a very, very different type of environment.”

The growing ubiquity of drones is forcing us to think about everything from PTSD for drone pilots to autonomous weapons to the risk of data vulnerability. The Verge spoke to Jackson, editor of One Nation Under Drones: Legality, Morality, and Utility of Unmanned Combat Systems about the history of these autonomous vehicles and what we’ll need to keep an eye out for in the future.

This interview has been lightly edited for clarity.

Let’s start by talking about the history of drones. They seem like a very modern thing, but you write that they have a fairly long history.

The notion that somehow these things popped into existence after 9/11 is commonly held, but if you go back and look, we have used unmanned systems going back as far as World War I. I talk a little about the Sperry Automatic Airplane, which was an attempt to say, “Airplanes with pilots are a new thing, can we possibly create an automatic airplane?” There was also one called the Kettering Bug, which is sometimes called an aerial torpedo. The notion was that you were able to direct these toward the target and hopefully strike without putting the pilot at risk, and that carries to today.

In World War II, there were a number of experiments with unmanned aircraft, including a situation where they’d load a bomber with explosives, take off from a base, and they would radio control the airplane into the target.

In more modern times, the CIA and others were trying to find Osama bin Laden and reported an observation of what looked like him. By the time they were able to get an armed aircraft back to attack that target, he was gone, so they started to question whether they could make not only an observation aircraft but also an attack aircraft.

How has the technology of military drones improved?

One of the other things that’s important for drones is not only that there is no pilot or crew aboard, but they also have the ability to stay over the target for 24

hours or more. That gives you an ability to look at the target and make sure you understand who's there. Also, if an aircraft can do 24 hours and a human can do about eight, that gives you the ability to swap crews out three times so you get fresh eyes without having to bring the aircraft back.

It's only because of communications technology that we are able to have the airplane itself in the theatre of operations and the operator back in the United States, like in Creech Air Force Base. This is possible because of undersea cables and satellite communications. And year by year, sensors are able to detect smaller and smaller targets that have increased endurance.

Captain John Edward Jackson, USN (ret), holder of the E.A. Sperry Chair of Unmanned and Robotic Systems at the US Naval War College. Image courtesy of John E. Jackson

When we think about drones, we typically think of aerial drones that are used in the military, but you write that there are plenty of other types of unmanned systems. What are some of these?

On the Navy side, there are unmanned systems in the air, on the surface of the sea, under the sea. People do tend to think of airborne vehicles, but there's an unmanned surface ship that's in sea trials right now. It's 132 feet and called the Sea Hunter, and it's designed to go off and do missions of up to 10,000 miles on a single tank of fuel with no one on board.

Outside of the military, drones are used by people who want to inspect pipelines and electrical lines and don't want to fly a manned helicopter to high-powered electric lines. In the area of precision agriculture, there's a great deal of work being done that would allow farmers to fly over their fields to determine which plants are healthy and which aren't, which waters are needed to do aerial spraying. Aerial spraying of crops is routinely done in Japan. We're somewhat limited now because the Federal Aviation Administration has got pretty strong control. Hopefully, we'll find a situation where through education, registration, and licensing, we can use these systems safely in more locations. These aren't just weapons of war, these are tools that can do a great deal to improve the way we do business.

When we do talk about drones in war, what are some of the ethical and legal ramifications?

We need to be cautious that we don't lower the bar to using force. The level of concern can be lower than it would be otherwise because there's no pilot inside, so we need to make sure we're still doing all the things diplomatically and economically that we should. We don't allow this to be "we'll just throw a drone in there."

Working with drones is a very, very difficult environment, and we've found that it's had an impact on individuals doing this. One question is, "Can you have post-traumatic stress for somebody who never left the United States" and the answer is yes. These folks are so intimately involved with the nature of the attack, they spend days or weeks planning the operation and are the ones asked to do

battle damage assessment. Some people say it's like playing a video game, but I can tell you from firsthand experience, nobody considers it a game of any sort.

There's also been a lot of consternation about under what circumstances should we be launching attacks in a third country with which we're not at war. Pakistan is the primary example. We have had the permission of Pakistan for many years to use these systems to strike at terrorist targets. In more recent years, Pakistan has taken back that permission and been less likely to allow us to do that. Legally, the position has been that we have a right under the UN charter and other international law regimes for self-defense. So if we determine that a third-party country is either unable to unwilling to take actions that are necessary to prevent attacks that would affect the US, we have the right to do better ourselves. It's kind of like preemptive self-defense. Of course, when you cross an international border, it raises a lot of issues.

Do we have existing international laws that regulate drones?

From the point of view of existing international law, the drone is in many ways no different from other systems, so we follow those. You need to make sure it's a legitimate target, it's a proportional strike to the benefit to the gained, you need to protect as much as possible the lives of innocents in the area. These are all rules of law that apply to both manned and unmanned systems. There's not a great deal of drone-unique law out there because the larger law covers it for the most part.

“YOU CAN'T PUT THE GENIE BACK IN THE BOTTLE.”

What about autonomous weapons?

Yes, there is a group of the Campaign to Stop Killer Robots, which says that we should discontinue using these things because of the potential that a system with high levels of general artificial intelligence could decide it doesn't need to follow the rules of human operators and do what it thinks is best for its own protection. That's a science fiction concept in many ways, but it's not beyond the realm of the possible that these systems could potentially do something we don't want something to do. It means that the developers need to make sure that they are building into these systems absolute control over the systems, that they cannot make decisions on their own that are detrimental to humanity.

There's a lot of discussion, but nothing concrete. The Department of Defense has instructions that clearly says there will always be a human in the loop, so it's taken the long view on this. The international law department here at Naval War College has done meetings with lawyers from around the world on how to get ahead of this problem. It's an issue of concern, but I can't point to any rule on how you use drones and warfare and autonomous weapons that's accepted at the international level. The US is, I would venture, the lead in developing these systems, but there are at least 60 other countries developing and using robotic systems. And you can't put the genie back in the bottle. The technology is out there, and it's being refined on a day-to-day basis.

What do you see as the future of unmanned systems?

In the military context, it's going to be manned and unmanned teaming. No one believes that all pilots will leave all the airplanes. It's not going to happen. There's only so many variables that you can program into any piece of software. You see projects where there's a fighter flying with a pilot, and then there are four unmanned wingmen flying with that individual, and he's able to direct those other aircraft onto strike targets to do surveillance and then come back.

There's another interesting project that attempts to take relatively small unmanned aerial vehicles, launch them out of the back of a cargo plane, have them do their mission and recover them in midair and bring them back into the airplane. It's pretty remarkable technology. We're very good now at air-to-air refueling.

Another focus will be transportation on roads. The biggest killer of soldiers is improvised explosive devices, so if the work is being done on automated convoys, there would not be anyone in those vehicles at all. It would go where it needed to go and do its job without putting people at risk. I personally have a positive view of these technologies. I hope that they'll be more effective and more efficient and more precise.

What do you think is the biggest risk?

Communication. If you're going to continue use unmanned systems, and we believe we are, we're going to have to be more sophisticated about people jamming signals or intercepting data. This is particularly true when you talk about unmanned submarines. You just can't talk to them when they're below the water. So you have to make sure you have secure communications. That's a big vulnerability.

Vocabulary

fairly stable situation – достаточно стабильная ситуация	be in sea trials – быть на морских испытаниях
be face to face with enemy – быть лицом к лицу с врагом	pipeline – трубопровод
ubiquity of drones – всеобщность дронов	high powered electric line – «высоковольтка»
data vulnerability – уязвимость информации	fly over the fields – летать над полями
PTSD – посттравматический синдром	healthy – здоровый
keep an eye out – быть настороже	ramification – ответвление
somehow – как –нибудь	consternation – ужас
the notion popped into existence – понятие возникло неожиданно	take back the decision – брать решение назад
deliver the aerial torpedo toward the target – доставить воздушную торпеду к цели	preemptive self defense – превентивная самооборона
	we should discontinue doing these things – мы должны закончить делать такое

without putting the pilot at risk – без подвержения пилота риску	realm – область, сфера
radio control the airplane into the target – контролировать по радио продвижение самолёта к цели	detrimental to humanity – губительный для человечества
swap crew – сменять экипаж, сменный экипаж	wingmen – ведомые дроны
endurance – прочность, выносливость	venture – осмеливаться
	be good at air-to-air refueling – хорошо осуществлять заправку в воздухе
	people tend to think that – люди стараются думать, полагают

7.2 Find equivalents in the text

Офицер ВМФ в отставке, определять контуры войны будущего, автономное оружие, быть лицом к лицу с врагом, заставлять думать о чём-то, уязвимость передачи данных, возникнуть неожиданно, беспилотный вертолёт, попытка сказать.

Направить к цели, успешно нанести удар, загрузить бомбардировщик взрывчатыми веществами, взлететь с базы, навести по радио самолёт на цель, атаковать цель, разведывательный самолёт, штурмовик.

Быть на борту, быть над целью 24 часа, поменять экипаж три раза, технология связи, театр военных действий, подводные кабели, спутниковая связь, быть способным определить цель, увеличенная прочность, кафедра роботизированных систем.

Воздушные дроны, быть на поверхности воды. над водой, под водой, надводные корабли без экипажа, выйти с базы в море, на одном танке горючего, инспектировать трубопроводы и электролинии, орошение полей с воздуха, контроль урожая.

7.3 Add prepositions if necessary

1. The warrior is face-to-face _ the enemy.
2. _ the end he comes home.
3. The drones popped _ existence after 9-11.
4. The aircraft torpedo could be directed _ the target and hopefully strike _ putting the pilot _ risk that carries _ today.
5. The bomber is loaded _ explosives.
6. The bomber is taking off _ the base.
7. The bomber is radio controlled _ the target.
8. _ more modern times the CIA and others were trying to find Osama bin Laden.
9. Drones have the ability to stay _ the target _ 24 hours or more.
10. They have the ability to swap _ crews three times

- 11.They are able to have airplane itself _ the theatre of operation.
- 12.It is possible _ undersea cables and satellite communication.
- 13.Drones are used _ military.
- 14._ the NAVY side there are unmanned systems in the air, under the water and on the surface of the water.
- 15.It is designed to go _ and do missions _ to 10000 miles _ a single tank.

7.4 Answer the questions

1. Who explains how drones will shape the tradition of war? What is he?
2. What does exist in the military instead of being face-to-face with the enemy?
3. What is growing ubiquity of drones forcing us to think about?
4. What unmanned system was used during the First World War?
5. What experiments were there with unmanned aircraft later?
6. Are drones used in military in modern times?
7. What is the main ability of such drones?
8. How is Creech Air Force Base used?
9. What types of drones are used in military?
- 10.“Sea Hunter”. Why was it designed?
- 11.How can drones be used outside the military?
- 12.How does the Federal Aircraft Administration organize a pretty strong control of using drones in the United States?

7.5 Translate

В США военные использовали беспилотные летательные аппараты в Первую мировую войну. Эта была так называемая воздушная торпеда. Они наводили её на цель и наносили удар, не подвергая риску пилота, так как это происходит и сегодня.

Во Вторую мировую войну проводились эксперименты с бомбардировщиком без экипажа, который взлетал с базы и по радио наводился на цель.

В более современные времена, ЦРУ и другие организации применяли дроны для поиска и слежения за террористами. Дроны используются не только как разведчики, но и как штурмовики.

Преподаватели кафедры робототехники Военно-морского колледжа США указывают, что основная особенность дрона, в отличие от управляемого экипажем самолёта – находиться над целью 24 часа. Человек может не более 8 часов. После этого экипаж должен быть заменён. Таким образом, цель контролируется постоянно, без возвращения самолёта на базу.

Развитие коммуникационных технологий позволяет управлять самолётами дистанционно, далеко от США, на театре военных действий.

Например, дроны действуют на Ближнем Востоке, а операры – пилоты находятся на базе на американской территории.

Это стало возможным благодаря развитию коммуникационных технологий, спутниковой коммуникации и подводных кабелей.

В ВМФ дроны используются на воде, под водой и над водой. Корабль «Морской охотник» был создан для того, чтобы без экипажа выйти из порта и выполнять задание на удалении до 10000 миль на одном топливном танке. Он должен контролировать продвижение вражеских подводных лодок в Мировом Океане.

В гражданском секторе дроны широко используются в сельском хозяйстве для контроля и полива урожая.

Федеральная Авиационная Администрация США контролирует гражданское применение дронов в стране, организуя обучение, лицензирование и регистрацию.

ЗАКЛЮЧЕНИЕ

Изучение современных аутентичных текстов на иностранном языке является эффективным способом систематизации знаний и дальнейшего изучения иностранного языка.

Подобные тексты сами по себе являются своеобразными учебными пособиями, которые одновременно учат актуальным грамматическим конструкциям и современной лексике.

Газетные и журнальные статьи прямо отражают современные нормы иностранного языка, которые существуют и применяются ежедневно носителями языка.

Выполнение заданий данного пособия – лишь первый шаг на пути познания современного иностранного, в данном случае, английского языка.

Важно помнить, что изучение иностранного языка – процесс постоянный, и желательно выработать привычку читать современные тексты регулярно, с опорой на изучающее чтение, обращая внимание на лексику, грамматику и стилистику.

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Science and life

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