



Student's evaluation of a classroom bring- your-own-device (BYOD) policy

Simon Thomas

Osaka Prefecture University, Japan
simon@las.osakafu-u.ac.jp

A bring-your-own-device (BYOD) policy advocates student's unrestricted classroom access to their own technology devices to assist in the completion of learning objectives. Literature illustrates that implementing BYOD can cause trepidation at the administrative and teaching levels due to the potential negative consequences and distractions that it can cause, despite the benefits that can be claimed. Investigations into the use of BYOD in university level second language education in Japan are limited. Similarly, it is also largely unknown whether students can make the tangible shift to using their own devices in the classroom to assist in completing tasks while remaining task focused. This study illustrates student's evaluations of a BYOD policy in a two-semester Academic English report writing and presentation focused program. It reveals, through a detailed categorization and illustration of qualitative comments, that students made a meaningful and positive shift in opinions. At the conclusion of the program, students placed a high value on the ability to use their own devices to achieve positive task outcomes. This study can build reassurances amongst teachers that student's use of their own devices in the classroom can be targeted, beneficial and motivating.

Keywords: student's own devices, classroom usage, challenges, hopes, positive evaluations

Introduction

The rise of BYOD (or *BYOT*, bring your own technology) in the classroom, has developed due to changes that first occurred outside education with the evolution in mobile technology culture.

Habits developed by children, who have grown up with devices in their homes and personal lives, created a need and desire for an overlap of device use in their educations (Gurung & Rutledge, 2014). Norris and Soloway (2011, p.3) called this the “Age of Mobilism,” which they declare is characterized by three predominant features.

1. The hyper-connectivity mobile technologies bring individuals,
2. The affordability of modern devices that allow this connectedness, and,
3. Globalness, defined by the extent to which it is touching people everywhere.

However, there is growing recognition that institutions are financially unable to provide all learners with technology putting them behind students in the ability to provide a wide range of up-to-date devices (Al-Okaily, 2013; Johnson, 2012; Probert, 2012; Sangani, 2013). This means that students are often more able to equip themselves with an increasing array of devices and applications that “they view as their primary and preferred means of consuming services, accessing content and communicating” (Probert, 2012, p. 73), and often seem more engaged, excited, motivated and interested to learn from (Ackerman & Krupp, 2012; Probert, 2012).

In terms of what BYOD means in education, Hockly (2012, p.44) describes it as an institution “explicitly implementing a policy of relying on student-owned technology, and providing the necessary support, infrastructure and evaluation to measure its efficacy.” This study accepts this broad definition of student-owned technology as not only restricted to personal smartphones but includes any technology devices which a student brings to the classroom and feels can be used to assist in the completion of the classroom task. Often this use of student-owned technology is utilized to enhance the face-to-face teaching, classroom learning materials, methods and social communication tasks to create blended learning spaces (e.g., Gruba, Cardenas-Claros, Suvorov, & Rick, 2016), although blended learning has also been ascribed other definitions (e.g., McCarthy, 2016; Sharma & Westbrook, 2016).

Considerations and challenges in BYOD

The implementation of BYOD in education presents a number of considerations and challenges categorized either as the “fear argument” against, or the “hope argument” for.

The fear argument against BYOD

When the largely North American, first language education centric literature is analyzed, it becomes evident that the establishment of institutional plans, strategies and restrictions affecting network security and access to content takes precedence over the benefits that BYOD can have on the learners and the learning outcomes that can be achieved.

The “fear argument” encompasses apprehensions that could affect all stakeholders (institutions, teachers, students and parents). These include worries of data security and device safety, network, infrastructure and device regulations, institutional and teacher policy creation, training and education in management and use, along with the creation of agnostic

content and equality and inclusivity for all students (Ackerman & Krupp, 2012; Al-Okaily, 2013; CISCO, 2012; Emery, 2012; Johnson, 2012; Kobus, Rietveld & van Ommeren, 2013; Probert, 2012; Sangani, 2013; Smith & Byrum, 2013; Thomas & O'Bannon, 2014; Ullman, 2011).

Fear is driven by concerns of how student's use of devices can be managed to limit the negative effects of allowing them access to unrestricted content on an institution's network, and how to restrict distractions from social media (Geller, 2013). A further argument against BYOD is the disadvantage and incompatibility between the devices, software and programs that a teacher adopts or recommends and the devices that students own (Geller, 2013).

Supporters of the fear argument are skeptical of, and see little significance to integrating BYOD in the classroom (Jonassen, 2006; Luckin *et al.*, 2009; Openheimer, 2004; Rowlands *et al.*, 2008; Selwyn, 2009). This perspective acknowledges that the functional skills young people possess that enable them to play games, use social networks and surf the web do not equip them with academic skills essential for learning (Gurung & Rutledge, 2014). In response, this suggests that this is a result of students not being given suitable educational instruction and guidance in how to use their devices for classroom learning.

Similarly, against the use of BYOD are the findings of a study by Kobus, Rietveld and van Ommeren (2013) that reveals that students find it cumbersome to carry their personal laptop computers or tablets to classrooms. This however, can be offset through the use of less bulky and heavy devices such as smart phones that can be more easily, conveniently and acceptably carried, but might have less capability in assisting in task completion. Many institutions may choose to stipulate which devices are BYOD acceptable taking this choice out of the student's hands.

The hope argument for BYOD

In contrast, the "hope argument" (Gurung & Rutledge, 2014) promotes the advantages of harnessing student's choice of devices, knowledge, skills and positive attitudes to learning. Firstly, the institution can reduce and redirect the costs associated with providing devices to learners. Secondly, students have greater familiarity with their own devices, creating ease of use with added convenience and portability for anytime/anywhere study (Norris & Soloway, 2011). To explain how this anytime/anywhere concept is applied to device use in the classroom, it means that once students are in the classroom, or have left it, they are able to easily pick up in a task where they left off and continue. This can allow greater student centered, personalized and independent learning as learners are given greater engagement, access to content and responsibility while also utilizing and developing 21st century learning skills in a rich and meaningful experience.

To utilize BYOD, it is suggested that teachers need only integrate into the classroom existing knowledge and skills developed through the use of personal technology (Hull & Nelson, 2005; Palfrey & Gasser, 2008; Tapscott, 2009), countering the argument that students don't possess the know-how. Alternatively, students can be educated in device use for educational purposes giving them skills that they may need once in future employment.

To overcome the argument of incompatibility of devices and software between institutions and students Campo (2013) and Fortson (2013) suggest teachers adopt device neutral tasks, enabling students themselves to choose the devices and tools with which to complete tasks. The device neutral task and outcomes can be introduced, demonstrated, assigned and completed on a wide range of devices and multiple applications with the requirement that

the teacher have some knowledge of applications available. This shifts focus towards the lesson objectives and allows the students to be creative and demonstrate learning. Falkirk Council Education Services (2013) provide a number of links to blogs and Google Docs to illustrate the kinds of tasks that can be set and corresponding cross-platform applications that can be used by both teachers and students.

Integrating BYOD in the language classroom

In order to encourage student's choice of which tools and applications to use within a device neutral assignment environment Campo (2013) recommends the following strategies.

1. Allow choice of product. Students show their learning through a video, website, screencast, essay or presentation.
2. Co-construct success criteria. If products will be different, allow students to assist in forming grading criteria and how products can meet the curriculum expectations.
3. Use generic descriptions. Instead of requiring "PowerPoint," use "presentation." Instead of requiring "Word," use "text-based" or "word-processing."
4. Suggest cross-platform services. Many apps and services can be used on all devices.
5. Group students purposefully. An activity may require a camera and a computer/laptop – pair a student with a smartphone with another who has a laptop. Conversely, group students with similar devices.

For further reading, many of the points that have been illustrated here, along with others are presented in a SWOT (strengths, weaknesses, opportunities, threats) analysis of the integration and use of BYOD in education, provided by Groupe Speciale Mobile Association (2012).

Classroom acceptance of BYOD

Despite the potential weaknesses and threats, BYOD is gaining greater acceptance due to the strengths and opportunities that affordable, portable devices can provide, and the pervasive communication, hyper-connectivity and access to information that this "age of mobilism" can produce. The literature recounting how BYOD is being adapted and used in schools and classrooms across Asia illustrates this growing trend (e.g., Cheng, Guan & Chau 2016; Choi, Chang & Lin, 2017; Zhao, 2017).

Specifically, within second language teaching and learning in Japan a number of universities have implemented BYOD policies, or technologies and programs that enable students to access their learning networks and platforms through their own devices. However, research illustrating methods of BYOD use in language learning, and evaluation to measure BYOD efficacy in task completion is limited. For example, Brown's (2016) study focused only on the use of smartphones and iPhones, distributing devices to students when necessary. Cripps (2017) restricts his study to two participants to measure the efficacy of the use of smartwatches. Similarly, unreported across research from Japan is how students have reacted to being asked to use their own devices and given the choices of how to complete device neutral tasks in the classroom. For students coming from traditional teacher-centered learning cultures this may be placing them and their teachers in a new and unfamiliar environment.

Venkatesh and Abrami (2006) determined from expectancy-value theory (Eccles *et al.*, 1983), that it depends on three affecting constructs.

1. How highly the teachers value the innovation (the benefits that are drawn through the innovation's use), e.g. increased achievement,
2. How successful teachers expect their application of the innovation to be (perceptions of the contingency between the use of the innovation and the desired outcome),
3. How highly they perceive the cost of implementation to be (the loss of time, overly high demands of effort, the loss of valued alternative activities, or negative psychological experiences, such as stress).

However, when a BYOD policy is implemented it is the students who are required to accept it, and then have the motivation to bring their devices to class. Expectancy-value theory, which has a specific focus on motivation in academic settings and on students, suggests two factors will increase student motivation to engage in a new pro-longed behavior, such as bringing devices to class in order to assist with completing tasks. Firstly, varying causal relationship variables, including academic expectancies and values contributing to achievement (Berndt & Miller, 1990). Secondly, by the value the student has attached to that task that will lead towards greater persistence, effective cognitive strategies and more affective attention and effort management (Eccles *et al.*, 1983; Rea, 2000; Wade & Adams, 1990; Wigfield, 1994; Wigfield & Eccles, 2000).

In consideration of these factors and for the focus of this study, the following research questions were devised to evaluate the BYOD policy in this classroom context from the student's perspective.

1. Do these students value a BYOD policy in their classes?
2. Do these students expect BYOD to be able to assist them in achieving positive task outcomes?
3. What costs do these students put on a BYOD policy?

Methodology

Context

Students were enrolled in the second year of an Academic English (AE) program focusing on the production of an academic style report and oral presentation. The objective in each of the two semesters (AE3 and AE4) was for student pairs to produce one five-paragraph report on a topic related to their academic major, and give a presentation assisted by electronic visual support on the research used within this report.

Classes in the first semester (AE3) taught students a range of core skills. For example, conducting Internet research in English, identifying trustworthy, relevant resources of information, paraphrasing, summarizing, citing/referencing sources, and writing to a particular structure utilizing specified forms and styles to submit a typed, appropriately formatted report. Students also designed electronic presentation slides, and used video and audio to assist in the practice, reflection, production and review of their final presentations.

In the second semester (AE4), core competencies deemed essential to the objectives were repeated using different activities in order to reinforce learning and advance further practice, while further proficiencies were added to enhance student's abilities. This repetition also meant that students were able to utilize the same, or similar BYOD devices and

tools to work towards achieving the objectives, developing their technology experience and know-how.

Each class was organized so that students could learn, and practice the core, required competencies in large groups, before then breaking into their pairs to apply learning to their own report/presentation topic, which would then be completed as homework. Students were encouraged to bring to class their choice of electronic devices to use at any time, to assist them in achieving each class objective during this group and pair work.

Each week, students were told what the subsequent week's activities were and this information could also be found in the semester syllabus. Students were not given any recommendations as to what kind of devices to bring. Neither were students given any guidelines about software or applications to use in order to complete the tasks. This allowed students complete control over the devices they chose to use and how the tasks were completed.

As the students were paired together to complete the objectives of each semester they also had to coordinate with their partner to decide on who would bring which devices and which software/applications to use.

Participants

Participants were 135, second-year, Japanese university students majoring in science and engineering-based subjects. They were spread between six, mixed language ability classes with an average TOEIC (Test of English for International Communication) score of between 400 and 600.

Procedure

The study is based in the realms of a relativist/interpretive ontology (Cohen, Manion & Morrison, 2011; Dieronitou, 2014; Gilbert, 2008; Gray, 2009; Levers, 2013), in which the existence of multiple subjective experiences is accepted and one, possibly correct reality is rejected. This line of thinking extends to believe that each student participant will have his/her own subjective reality at the start of AE3, and that over the two semesters, behavior and opinions towards the BYOD policy and its effectiveness may alter.

The data for this research was collected in two stages. At both points an electronic Survey Monkey questionnaire containing open-ended questions (Cohen, Manion & Morrison, 2011, Gilbert, 2008) with directed prompts to focus attention towards relevant issues and critical concepts (Ritchie & Lewis, 2003) was sent to students by email to complete. The benefit of open-ended questions in an exploratory study is "*the potential for richness of responses*" (Gray, 2009, p.348), which is able to capture each student's own subjective experiences. Questions were written in English.

At the start of AE3, the first BYOD-enabled semester, students were asked the following question with directed prompts:

"What is your opinion of students bringing, and using their own electronic devices in the classroom to complete Academic English 3&4?"

You can use some of the following questions to help you:

Which devices would you like to bring and use in class? What are the advantages of bringing technology devices to class? In class, what do you think you can use the devices

for? Why won't you bring devices to class to use? What are the disadvantages of using technology devices in class? What are the problems you might have using devices in class?

After completing AE4 students were asked the following question with directed prompts:

In AE3/4 you could bring and use your own electronic devices in class to help you. What is your final opinion about this?

You can use some of the following questions to help you:

Which devices did you bring to class and how often did you bring these devices? Why did you bring these devices? What were the advantages of bringing and using technology devices in class? In class, what did you use the devices for? Why didn't you bring devices to class? What were the disadvantages of using technology devices in class? What were the problems you had using devices in class?

Students were not given instructions to respond in English and responses in Japanese were translated and back translated by independent bi-lingual researchers. The subjective, rich-response data collected was read multiple times to gain familiarity, then fed into the on-line web application mixed methods data analysis tool Dedoose (<http://www.dedoose.com/>), which enabled digital highlighting, cutting and sorting. The data was coded and reduced to categories and themes relative to each research question which enabled easier analysis. These were then sorted to enable easier comparison between data sets and over the collection period. The categories and themes that were identified will be illustrated here to enable the student's evaluation of the BYOD policy to be made.

Results

Analysis of the data collected at the start of AE3 and the end of AE4 revealed prominent themes and opinions towards the BYOD policy. These were identified by word repetition and key words in context (Ryan & Bernard, 2003) and can be divided into five classification categories.

1. General opinions towards BYOD,
2. Favored devices to use in the BYOD classroom,
3. The benefits that devices bring,
4. Purposes for which devices are used, and,
5. The disadvantages of BYOD.

These five categories each feature sub-categories which add depth to the data. Each category and sub-category will be presented first by the numerical data to illustrate a comparison of opinions between the start and end of the AE3/4 program. Following this, representative qualitative comments that identified these categories and sub-categories and illustrate how opinions changed will be presented to enable the reader to understand the voices of these students. Many of these student comments that will be illustrated can be sorted within several of the available categories and sub-categories. The illustration of these comments will be interspersed with commentary to summarize and discuss the findings.

General opinions towards BYOD

The sub-categories of student’s general opinions towards BYOD are identified in Table 1. Each student comment was assigned to one sub-category. For example, a comment that projected an overall positive opinion, but also included fewer/minor negative comments was sub-categorized as “Mainly positive with some negative.”

Table 1. Comparison of student’s general opinions of BYOD at the start and end of the AE3/4 program

	Sub-categories of BYOD opinions	Start of AE3 Program	End of AE4 Program
1.	Positive only	5	112
2.	Mainly positive with some negative	72	14
3.	Equally positive and negative	46	6
4.	Mainly negative with some positive	11	0
5.	Negative only	0	0
6.	Not necessary	0	1
7.	Did not answer the question	0	1
	Total	134	134

At the start of AE3, the total number of comments featuring positive opinions towards BYOD outweighed the negative, although the majority of these positive opinions were also coupled with negative. The positive attitudes were identified by illustrative phrases such as “I think there are 2 positive points of using technology devices,” “As for the positive points, ...,” “I agree ...,” and “I think that students should bring technology devices.” Also identifying positivity were singular words with positive connotations, including “convenient,” “effective,” “useful.”

In total, five comments fell into the “Positive only” sub-category. One of these will be shown in full as it provides a high-end example of the standard of a student’s English ability and illustrates how the further categorization/sub-categorization of comments was carried out. All comments from students have been included as is without correction for language errors.

“A lot of technology devices are useful and quick to want to search something. I think that bringing technology devices into class makes learning more active in the class of Academic English 3 & 4. First of all, a lot of technology devices are useful. Notebook PCs, for example, have a large number of functions and can store a mass of data and information. By using notebook PCs, we are able to collect information, store it, put it in order, and make presentation material and so on. Second, smartphones are more portable than desktop PCs. Finally, electronic dictionaries have an English-Japanese dictionary, and English-English dictionary and a Japanese-English dictionary. One dictionary plays various roles.”

The phrase “A lot of technology devices” in the first sentence is classified in the “General devices” sub-category of Category 2, “Favored devices to use in the BYOD classroom.” Later, notebook PCs, smartphones, and electronic dictionaries are specifically mentioned for their benefits, and these are also added to these sub-categories of Category 2. In Category 3, “The benefits that devices bring” devices are associated with, being useful and quick to search

for information sub-categorize them as “convenient” and “efficient.” Further, the ability to collect information, store it, put it in order, and make presentation material and so on, sub-categorize devices as “effective for completing tasks.” Finally in this category, BYOD – specifically smartphones – is associated with “portability.” In Category 4, “Purposes for which devices are used” the following sub-categories are identified: “Carry our research on the Internet,” “Use applications to carry out tasks,” “Check grammar,” and “Check meaning/spelling.”

At the start of the AE3 program there were 5 positive only comments. In comparison, by the end of AE4 there were 112 positive only comments. For example:

“I brought a PC. I think bringing technology devices is helpful to us because we can make or revise presentation slides, reports and so on in class. Also we can research instantly what we want to know.”

“I think it is good to use technology devices in class. It is because whenever I want to research something or want to modify our groups report, I could do them instantly. If I had not been able to bring any technology devices, I would have had to do them after class, so I would have trouble remembering what I had to do.”

At the start of AE3 72 participants identified the BYOD policy as mainly positive, but with some negative points. At the end of AE4 this reduced to 14. These 14 participants commonly first identified a number of positive aspects, which were followed by “*but*,” or “*however*” and then their negative thoughts on BYOD. For example:

“I agree with students bringing technology devices into class to use to help us, because I think that we can use modern conveniences which help us to study. If we use technology devices in class, we can research everything in the internet with PCs, tablets and smartphones immediately, we can look up a word in electronic dictionaries and we can watch our own self talking English with video cameras. However, we must not use technology devices to play in the class. If anyone use that to play, we must stop using this devices soon.”

This technique of using “*but*” or “*however*” was similarly used at the start and end of AE3/4 for other mixed opinion subcategories.

This dramatic change in distribution across the positive and negative opinions towards BYOD by the end of AE4 identifies a distinct change in belief for many students, and the high value that they placed on utilizing BYOD to assist in completing classroom tasks.

Favored devices to use in the BYOD classroom

This next classification (Table 2) identifies the devices students thought they would bring, then did bring and use in the classroom. Each mention of a device is categorized and many students mentioned more than one device. Observation by the teacher during classes noted that as the students were working towards semester objectives in pairs, often one pair might use one notebook PC between them, or occasionally both partners may use individual notebook PCs, while smartphones, for example, were more commonly used individually. The questions asked to students did not make this differentiation and this is a limitation of this study.

Table 2. Favored devices to use in the BYOD classroom

Sub-category of devices		Start of AE3 Program	End of AE4 Program
1.	Electronic dictionary	33	31
2.	General (electronic) devices	95	8
3.	Notebook PC	25	66
4.	Smartphone	27	103
5.	Tablet	6	6
6.	Video camera	22	1
7.	Voice recorder	4	0

At the start of AE3 the phrase most often used was “electronic devices” and this may have been affected by the neutral wording of the question. In Table 2 these comments have been classified as “General (electronic) devices.” At this stage, it was not often mentioned whether the electronic dictionary, video camera, and voice recorder were included as applications or features of smartphones, or stand-alone devices. In these cases, they were categorized as stand-alone devices.

After completing AE4 students were more aware of the specific devices that they wanted to use in the classroom to complete the required tasks as the low number in “General (electronic) devices” illustrates. The smartphone was mentioned by 103 students. This is possibly influenced by its high prevalence as a commonly used daily tool, the high number of functions available, and the familiarity and ease with which they can be employed in tasks.

“I often used my smartphone in class because it is easy to carry everywhere and I think it’s a good idea to use these devices in the class because we can check everything on the internet whenever we want.”

“I didn’t bring many devices to class because I only have a smartphone. But smartphone is very useful to me. It can record video and do computer search, refer to a dictionary.”

Despite this ease of use, the smartphone was often used in conjunction with other tools, such as the notebook PC (66 students) and the electronic dictionary (31 students) to multi-task. Commonly, the smartphone was used to research topics and check vocabulary, the electronic dictionary was used to check the meaning and usage of words, and the PC was used to write and design presentation slides.

“When I want to use the Internet, I can use my smartphone and using my electronic dictionary I could check the meaning and use of the word immediately.”

“PC helped my when I corrected my report and my presentation slide easily. My smartphone helped me when I check my presentation and research my report information.”

By the end of AE4 and as the data illustrates, the smartphone and the notebook PC were the two most favored devices to use in the classroom.

Benefits that devices bring

The third classification (Table 3) identifies the benefits of the BYOD policy. Each benefit mentioned was recorded.

Table 3. Benefits that BYOD devices bring

	Sub-category of benefits	Start of AE3 Program	End of AE4 Program
1.	Anytime, anywhere ability to work on tasks	0	6
2.	Convenience (ease of use for needs)	37	0
3.	Eco-friendly	1	0
4.	Effectiveness associated with completing a task	9	38
5.	Efficiency (time saving)	15	40
6.	Familiarity with the device	4	5
7.	Growth of skills associated with use of devices	13	2
8.	Individual ability to transfer data	12	0
9.	Portability	16	17

At the start of AE3 the benefit of “Convenience (ease of use for needs)” appeared most frequently, usually associated with features of purpose, suggesting that students perceive tools will be able to assist them in completing tasks. For example, “... we can immediately look up what we want to know. By contrast, for example, it takes time to consult a paper dictionary” illustrates the perceived convenience of the electronic dictionary and it’s time saving efficiency. Also, “If we can use the Internet, we can’t look for only word’s mean but also many information connected to the class. If we use video cameras, we can see the class many times” points out the perceived convenience of devices to gather the meaning of words, to research topics, and review a class through the use of video.

By the end of AE4, the most frequently identified benefit (40 students) has shifted to the efficiency that devices bring by allowing students to carry out tasks when they want to.

“The advantage of bringing technology devices in class is to be able to work efficiently. We can research and write a report immediately when we have a nice idea.”

“When I need information in class I was able to search that on the Internet by using smartphone and PC.”

As described in the literature review and explained by Norris and Soloway (2011), this benefit of efficiency may also be inter-relatable with the sub-categories of portability and the anytime/anywhere ability to work on tasks, as students are able to use the same device to easily pick up and continue a task either in, or after having left the classroom.

Similarly important, identified by 38 students and very closely associated with the time saving efficiency was the effectiveness of the devices to enable students to complete tasks.

“I had sometimes brought PC to class, which enabled me to make sentences and slides. It was very good because I could reflect the things I have learned in the class to my work immediately.”

“I took ipad to do some research and iphone to take a video. It’s said that work becomes more efficient on leaps and bounds because it’s possible to check these advantages at the place.”

These two benefits of time saving efficiency and effectiveness to carry out tasks were identified as the most valued at the end of the AE3&3 program.

Purposes for which devices are used

This fourth classification (Table 4) identifies the many purposes that students used the devices for in the classroom over the two semesters.

Table 4. Purposes for which BYOD devices are used

	Sub-category of purposes	Start of AE3 Program	End of AE4 Program
1.	Build general English ability	16	1
2.	Carry out research on the Internet	76	99
3.	Check grammar	55	4
4.	Check meaning/spelling	46	60
5.	Design presentation visuals	46	46
6.	Learn and solve problems	7	3
7.	Listen to reviews	5	0
8.	Make notes in class	4	0
9.	Share and communicate with a partner	8	11
10.	Use applications to carry out tasks	11	0
11.	Watch to review	20	47
12.	Write reports	41	57

Finding and collecting research on their chosen topics in a second language required a great deal of time and this was the most frequently occurring theme associated with BYOD at both the start (79 comments) and end (99 comments) of AE3/4.

“It’s a good idea to use these devices in the class because we can check everything on the Internet whenever we want.”

As an effect of carrying out program goals in a second language students invariably encountered English vocabulary they needed to check the meaning or spelling of. At the end of AE4, the ability to do this was a valuable benefit for 60 students.

“When I read a document, I had some words I didn’t know its meaning. Then, if I had my electronic dictionary, I used it but it’s a little heavy so sometimes I used my smartphone instead of it.”

“I brought my smartphone in class. I used it when I found words which I didn’t know their meaning. I could know the meanings quickly by using it.”

The second-language translation ability was not only necessary to complete research for the report and presentation topics, but also to assist students in understanding the content of lessons, and the presentations given by other students.

“What I used most is the net function of the iphone. For example, in the classroom, if I could not understand the words that the teacher said, I can quickly find out using the net.”

“In other groups’ presentations about chemical things they use technical terms. Most listeners cannot understand presentation content perfectly without technology devices.”

At the completion of AE4, students recognized the uses and functions of devices (especially the notebook PC) to assist in completing the goals of writing a research report (57 students) and designing visual aids to accompany the presentation (46 students).

“I’m agree to bringing and using own technology devices in class, because ... I can research on my topic and can write report and make presentation slides while I exchange opinions with my partner.”

“We can research the information and make reports and presentation slides in class.”

The number of students that recognized the use of video as a tool to assist self-reflection in the development of presentation giving increased from 20 to 47 over the course of AE3/4.

“We practiced presentation with taking video. We could look at our presentation objectively.”

“I think that taking a video is very suitable for improving the content of the presentation. The advantage is that you can grasp their good and bad point by taking videos when practicing. With devices such as mobile phone we can overcome our weaknesses.”

At the start of AE3 students associated BYOD as being able to assist with a wide range of purposes in the classroom, but by the end of AE4 student’s use of devices is defined with much greater clarity in line with the program’s objectives.

The disadvantages of BYOD

Despite the benefits that BYOD can bring and the purposes that devices can be used for, students are also aware of the negativity associated with their presence. This final classification identifies the disadvantages that students connect with using devices in the classroom (Table 5). Each disadvantage mentioned was categorized.

Table 5. Disadvantages of BYOD

Sub-category of disadvantages		Start of AE3 Program	End of AE4 Program
1.	Cost of devices	4	0
2.	Damage to devices	3	0
3.	Devices need a electricity charged battery	5	2
4.	Device use is bad for health	3	0
5.	Devices have to be carried	2	6
6.	Difficulty of use	4	0
7.	Distractions that devices cause	91	9
8.	Memory capacity is too small	0	2
9.	Non-electric devices are better	4	2
10.	Opportunity to be fed misinformation from the Internet	24	4
11.	Over reliance to the detriment of thinking for themselves or communicating with classmates or teacher	44	1
12.	Poor Internet connectivity	0	3
13.	Risk of devices infected with viruses	1	0
14.	Screen size too small	0	3
15.	Some students don't have devices	4	1

At the start of AE3 the most prominent of the perceived disadvantages (91 comments) is the distraction that devices can cause, diverting student’s attention away from the communication that can take place in class and the tasks. The following comment is illustrative of this demerit:

“Technology devices, for example, PC, smartphones have a bad effect on our concentration. When I listen to what teacher said, people using such devices interfere with my concentration. For industrious people, such devices is disturbance. We can use such devices at home. But we can’t face and communicate with teacher and classmate at home. When we use technology device and listen to teacher’s talk at the same time, we can’t pay attention both things.”

Forty-four students were also concerned about the over-reliance associated with the easy access to knowledge and information that can be obtained through the use of devices.

“... using these devices allow us to collect a lot of information what we need easily. Bringing them into class is good because we can solve questions instantly. But I should be careful to rely on them too much. It is important to guess the word that I don’t know because in the real situation, I can’t use electronic dictionaries. Technology devices addition is not good. And in some cases, by asking (the teacher), I can train my speaking skill. Using them moderately in class is the best way, I think.”

Similarly, a concern with the research element at the start of AE3 for 24 students was the awareness that not all the information available to students on the Internet is true and that they might be fed misinformation in their research.

“We can get most information if we use the electronic devices. We can get information anytime and anywhere. On the other hand, the demerit is to depend on its information. We may stop thinking about the problem because we rely on the electronic devices. In addition, we believe the data which we get by devices. It is necessary for us to use it after understanding the information and thinking whether it is right.”

Compared with the start of AE3 the frequency of comments highlighting the negative aspects of BYOD has decreased considerably by the end of AE4 when all instances of negative comments were also coupled with positive aspects. This illustrates the increased positive value that students placed on the BYOD policy. The following comments are illustrative of the nine students who identify this coupling of the negativity of BYOD as a distraction with the positivity of BYOD.

“When we bring PC and smart phone to class, there I a possibility that we send emails and play video games. However, we can immediately look up our unknown words, and collect material for our presentation by using these. I think this advantages is more important than that disadvantages, ...”

“Technology devices help us understand obscure things immediately. But there are some problems that some people use technology without hearing teacher’s stories ...”

Second to the distraction factor came the inconvenience of bringing/carrying devices, particularly laptop PCs due to their weight. This increased from two to six students.

“Although a computer may help me, it is bigger and heavier than a smartphone. So I brought my smartphone.”

“I and my partner did not bring in much PC because it is heavy and is hard to take from my house and the library did not have it sometimes.”

This last comment illustrates that students were able to borrow notebook PCs from the library when they were available. Data on how many students utilized this option was not collected.

At the end of AE4 three newly identified sub-categories were acknowledged by less than three students each. These represent barriers to the use of the BYOD policy and student’s use of their own devices. The first of these limiting factors was the size of the smartphone screen which reduced the ability to carry out some tasks.

“I didn’t have a computer so I almost used a smartphone only. I felt a necessity of a computer because smartphone’s screen was small and it is difficult for me and my partner to see.”

The second and third of these new negative sub-categories recognized the need to register personal notebook PCs in order to connect to the free Wi-Fi provided by the university, and for larger battery and storage capacity to carry out the required tasks.

“I couldn’t use the internet because I didn’t know how to connect to the free Wi-Fi.”

“Mobile phone camera is very useful tool, but we use electricity device: mobile phone frequently. I do not have my mobile phones capacity of battery and data.”

The low number of comments relating to these factors however illustrates that the majority of students may have worked their way around them to be able to successfully utilize their devices. These work-arounds may have been to use the national 3G/4G network, being able to successfully connect to the university's Wi-Fi network using the instructions that this teacher provided at the start of the semester, or by managing device use successfully.

Discussion

BYOD, which encourages a move away from the use of institution provided hardware and facilities and towards student's utilization of their own devices, has till recently, been largely concerned with administrator's and teacher's fears. This investigation aimed to evaluate the BYOD policy in these Academic English classes from the student's perspective to determine the following.

1. Do these students value a BYOD policy in their classes?
2. Do these students expect BYOD to be able to assist them in achieving positive task outcomes?
3. What costs do these students put on a BYOD policy?

This is the first study of this kind to be carried out within the Academic English program in this institution. The study establishes a baseline of information generated by student's comments, on their opinions within the five categories concerning general attitudes towards BYOD, favored devices, the benefits of using devices within a writing and presentation focused program, the purposes for which devices were used, and finally the disadvantages students associated with using their own devices in the classroom. Qualitative data taken from the start and the conclusion of AE3/4 illustrates how student's evaluative opinions towards BYOD and transformed over the two semesters.

At the start of AE3 student's perceptions of which devices to use, the benefits, the purposes, and also the disadvantages of use were spread over a large number of possible options. This could be expected as students may not have been completely aware of what AE3/4 entailed and what they would be asked to do with their devices. By the completion of AE4 the identified options within these categories had reduced to a much more finely selected number of specific preferences, that are sharply tuned towards assisting with completing and achieving the program's goals.

Although students showed some hesitancy to fully accept BYOD at the start of AE3, illustrated by coupling of positive opinions with negative, this negativity had dissipated by the end of AE4. The high number (112) of "*positive only*" comments illustrated that students put a great value on the use of BYOD in the classroom. If this positive general feeling of the BYOD policy could be illustrated by one comment from within student's responses, it would be the following:

"I agree that students use technology devices in class. Of course, they are able to play games or research what is not related to study (...), but it does not mean that technology devices prevent us from studying. Because they are decided good or bad by how we use. Technology devices have more merits than demerits."

As this comment identifies, the merits of device use in the classroom outweigh the demerits, and individual behavior and motivation to complete tasks leading towards the classroom goals determines this use.

Initially unsure of which devices they favored, the preferred device (103 students) became the smartphone. Reasons identified for this were the wide number of uses it can be applied to, including second language dictionaries, web-search research functions, and reviewing and reflecting on self-made videos of presentations. It was also speculated that its prevalence amongst students contributed towards this favorability. The second most popular device was the notebook PC (66 students). While this could also be used for research purposes, it would have been able to assist students more specifically with report writing tasks and in designing visual aids for the presentation. The number of comments that it received perhaps signifies that, in comparison to the smartphone, the notebook PC was brought to class by fewer students and less often. This suggests that most students were completing the majority of writing and design of presentation visuals outside the class in their own time, and were using class time for planning, discussion and research. The exact motives for this were not identified. But, six comments at the end of AE4 identify the perceived inconvenience of carrying a notebook PC to class. However, it could also have been affected by the 135 students being divided into pairs to complete each semester's objectives. That this was not investigated further is a limitation of this study.

Although convenience and portability were perceived as benefits of device use at the start of AE3, by the end of AE4, efficiency and effectiveness were most valued, particularly when needing to carry out research, and to a lesser extent writing. This is supported by the purposes of device use students identified. Carrying out research related to presentation topics was the most beneficial purpose of using devices, followed by checking meaning and spelling as students read through the second language research they had found. Writing reports, watching to review, and then designing presentations came next, for which smartphones, notebook PCs and electronic dictionaries were used. These top 5 purposes seamlessly reflect the objectives of the AE3/4 program and suggest that students do place a high value on these devices and the BYOD policy in being able to assist them in achieving positive task outcomes.

The final of the themes identified within student's qualitative comments were the negative costs of BYOD. Overwhelmingly, at the start of the semester students showed concern about the distractions that having devices in the classroom and the resultant access to SNS networks, the web, and games could cause. Other high-ranking concerns included the possible over reliance that could be placed on devices to the detriment of thinking for themselves and communicating in the classroom, and the worry that research and information found on the web could be false. By the end of AE4, although these concerns were still present, the frequency of negative comments on BYOD had depleted considerably and could only be found in very slight proportions of student numbers. In summary, there was a much higher frequency of comments providing details of the positive value placed on BYOD to assist students in achieving positive task outcomes, in comparison to the low number of comments on the negative costs put on BYOD.

The considerable changes that occurred in opinions through the passage of the AE3/4 program gives a strong indication that the BYOD policy can be accepted by students, and so should be continued within this particular program taught by this teacher.

Conclusions and implications

For theory and research this study has provided what could be considered a baseline of knowledge on these student's attitude and usage adaptations of their own devices within

a writing and presentation focused second language program with students at this mixed level of language ability. This study started by opening with a wide scope of investigation and a research question that gave students the freedom to comment on and bring up areas which they considered relevant. This provides a scope for research to now delve deeper into some of the ideas that have been presented. This includes, but is not limited to, specific reasons why approximately half the students did not bring notebook PCs to utilize in the completion of tasks in class, and, which applications and services are used by students to complete the tasks, communicate, share and collaborate with their partners.

Kobus, Rietveld, and van Ommeren (2013) suggested the reason students do not bring notebook PCs to class is because they will not choose to bring heavy or cumbersome devices. This may be the reason that, as the previous discussion of BYOD suggested, most of the writing and design of presentation visuals was being done in student's own time outside of class. If this is the case, the implications for this teacher's practice and the use of the BYOD policy in the AE3/4 classes could result in future structural changes to the syllabus. If this is so, how should this affect the amount of time that is given to students in class to use BYOD for their projects? If less pairwork time is to be given to students in class, could more time be dedicated to practicing key classroom concepts? If so, is a BYOD policy necessary? Further to this, would a data base of applications and services used by students to complete the tasks, communicate share and collaborate be beneficial to future students, or would it decrease the flexibility that is currently afforded, while also creating an information overload on the students? This could be revealed with further investigation.

In terms of policy, this study may begin to confirm to other teachers that students are able to develop positive device usage habits to complete clearly structured, well defined classroom tasks. This may start to dispel fears of implementing a BYOD policy in classrooms, and enable teachers to see that student's use of their own devices can be an aid to assisting them in positive task completion, rather than a hindrance.

References

- Ackerman, A. S., & Krupp, M. L. (2012). Five components to consider for BYOT/BYOD. *Presented at International Association for Development of the Information Society (IADIS) International Conference on Cognition and Exploratory Learning in Digital Age (CELDA) 2012*. Retrieved from <http://files.eric.ed.gov/fulltext/ED542652.pdf>
- Al-Okaily, R. (2013). Mobile learning and BYOD: Implementations in an intensive English program. *Learning and Teaching in Higher Education: Gulf Perspectives*, 10 (2).
- Berndt, T., & Miller, K. (1990). Expectancies, values, and achievement in junior high school. *Journal of Educational Psychology*, 82, 319-326.
- Brown, I. (2016). Blended learning with student BYOD smartphones and iPhones. *Matsuyama University, Studies in Language and Literature*, 36(1), 78-119.
- Campo, S. (2013). *Device neutral assignments: DNA for BYOD*. Retrieved from <https://www.smore.com/roum-device-neutral-assignments>
- Chen, N. S., Kinshuk Wei, C. W., & Liu, C. C. (2011). Effects of matching teaching strategy to thinking style on learner's quality of reflection in an online learning environment. *Computers & Education*, 56, 53-64.
- Cheng, G., Guan, Y., & Chau, J. (2016). An empirical study towards understanding user acceptance of bring your own device (BYOD) in higher education. *Australasian Journal of Educational Technology*, 32(4), 1-17.

- Choi, P., Chang, C. & Lin, C. (2017). BYOD or not: A comparison of two assessment strategies for students learning. *Computers in Human Behavior*, 74, 63–71.
- CISCO. (2012). *University embraces bring-your-own-device with wireless network*. CISCO Customer Case Study. Retrieved from https://www.cisco.com/c/dam/en/us/products/collateral/wireless/C36-698193-00_University_Embraces_Bring-Your-Own-Device.pdf
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Abingdon: Routledge.
- Cripps, A. (2017). Assessing the efficacy of bring your own device/bring your own technology: An exploratory study. Retrieved from <https://nanzan-u.academia.edu/TonyCripps>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, 13(3), 319–339.
- Dieronitou, I. (2014). The ontological and epistemological foundations of qualitative and quantitative approaches to research with particular reference to content and discourse analysis of textbooks. *International Journal of Economics, Commerce and Management*, 2 (10), 1–17.
- Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: W.H. Freeman.
- Emery, S. (2012). *Factors for consideration when developing a Bring Your Own Device (BYOD) strategy in higher education*. Retrieved from <https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/12254/Emery2012.pdf?s>
- Falkirk Council Education Services. (2013). *Device neutral assignments*. Retrieved from <https://blogs.glowscotland.org.uk/fa/mobiledevices/device-neutral-assignment/>
- Fortson, K. (2013). Creating device neutral assignments for BYOD classes. *The Journal*. Retrieved from <https://thejournal.com/articles/2013/01/09/device-neutral-assignments-for-byod.aspx>
- Geller, J. (2013). Beware BYOD. *Communications*, 56(9), 8–9.
- Gilbert, N. (2008). *Researching social life* (3rd ed.). Thousand Oaks, CA: SAGE Publications Ltd.
- Gray, D. E. (2009). *Doing research in the real world* (2nd ed.). Thousand Oaks, CA: SAGE Publications Ltd.
- Groupe Speciale Mobile Association. (2012). *SWOT analysis of the mobile education sphere*. MLearn 2012 Pre-conference workshop. Retrieved from <https://www.gsma.com/.../SWOT-analysis-created-from-the-GSMA-workshop.pdf>
- Gruba, P., Cardenas-Claros, M., Suvorov, R., & Rick, K. (2016). *Blended language program evaluation*. Basingstoke: Palgrave Macmillan.
- Gurung, B. & Rutledge, D. (2014). Digital Learners and the overlapping of their personal and educational digital engagement. *Computers & Education*, 77, 81–100.
- Hockly, N. (2012). Tech-savvy teaching: BYOD. *Modern English Teacher*, 21(4), 44–45.
- Hull, G. A., & Nelson, M. E. (2005). Locating the semiotic power of multimodality. *Written Communication*, 22(2), 224–261.
- Johnson, D. (2012). On board with BYOD. *Educational Leadership*, 70(2), 84–85.
- Jonassen, D. H. (2006). *Modeling with technology: Mindtools for conceptual change* (3rd ed.). Columbus, OH: Merrill/Prentice Hall.

- Kobus, M. B. W., Rietveld, P. & van Ommeren, J. N. (2013). Ownership versus on-campus use of mobile IT devices by university students. *Computers & Education*, 68, 29–41.
- Levers, M.-J. D. (2013). Philosophical paradigms, grounded theory, and perspectives on emergence. *SAGE Open*, October–December 2013, 1–6.
<https://doi.org/10.1177/2158244013517243>
- Luckin, R., Clark, W., Logan, K., Graber, R., Oliver, M., & Mee, A. (2009). Do Web 2.0 tools really open the door to learning: practices, perceptions and profiles of 11–16 year old learners? *Learning, Media and Technology*, 34(2), 87–104.
- McCarthy, M. (Ed). (2016). *The Cambridge guide to blended learning for language teaching*. Cambridge: Cambridge University Press.
- Norris, C. A., & Soloway, E. (2011). Learning and schooling in the age of mobilism. *Educational Technology*, November–December 201151(6), 3–10.
- Openheimer, T. (2004). *The flickering mind: The false promise of technology in the classroom and how learning can be saved*. New York: Random House.
- Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. New York: Basic Books.
- Probert, T. (2012, June). BYOD – an educational revolution? *University Business*, 50, 72–73.
- Rea, D. W. (2000). Optimal motivation for talent development. *Journal for the Education of the Gifted*, 23(2), 187–216.
- Ritchie, J. & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. Thousand Oaks, CA: SAGE Publications Ltd.
- Rowlands, I., Nicholas, D., Williams, P., Huntington, P., Fieldhouse, M., Gunter, B., Withey, R., Jamali, H. R., Dobrowolski, T., & Tenopir, C. (2008). The Google generation: The information behaviour of the researcher of the future. *Aslib Proceedings*, 60(4), 290–310.
- Ryan, G. W., & Bernard, R. (2003). Techniques to identify themes. *Field Methods*, 15(1), 85–109.
- Sangani, K. (2013). BYOD to the classroom. *Engineering and Technology*, 8(3), 42–45.
- Selwyn, N. (2009). The digital native – Myth and reality. *Aslib Proceedings*, 61(4) 364–379.
- Sharma, P., & Westbrook, K. (2016). Online and blended language learning. In F. Farr, & L. Murray (Eds.), *The Routledge handbook of language teaching and technology* (pp. 320–333). New York: Routledge.
- Smith, S. & Byrum, D. (2013). Using a BYOD model to teach a graduate level video production course to in-service teachers. In R. McBride & M. Searson (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2013* (pp. 1738–1745). Morgantown, WV: AACE.
- Tapscott, D. (2009). *Grown up digital: How the net generation is changing your world*. New York: McGraw-Hill.
- Thomas, K. & O'Bannon, B. (2014). BYOD – As long as your device is not a cell phone!: Perspectives from the classroom on cell phones integration. In M. Searson & M. Ochoa (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2014* (pp. 354–1364). Morgantown, WV: AACE.
- Ullman, E. (2011). The new one-to-one. *Technology & Learning*, 31 (7), 54–57.
- Wade, S. & Adams, R. (1990). Effects of importance and interest on recall of biographical text. *Journal of Reading Behavior*, 22, 331–353.
- Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational Psychology Review*, 6(1), 49–78.

- Wigfield, A.L. & Eccles, J.S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25, 68–81.
- Wozney, L., Venkatesh, V., & Abrami, P.C. (2006). Implementing computer technologies: Teachers' perceptions and practices. *Journal of Technology and Teacher Education*, 14(1), 173–207.
- Zhao, J. (2017). Factors influence EFL teacher's adoption of BYOD. *2017 3rd Annual International Conference on Modern Education and Social Science* (pp. 149–156), April 21-23, Nanjing, China. <https://doi.org/10.12783/dtssehs/mess2017/12104>