Actionbound at School: An Introduction to Library Use with Apps & Co.

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“Smartphones in school are a nuisance”, according to most teaching staff. “Why go to the library? - I always have Google at the tip of my fingers”, is what many students (and - secretly - increasing numbers of teachers) think. Is it possible to utilize the students’ existing devices and competencies in a didactically meaningful way? What do we need to consider when we want to incorporate mobile devices into lesson plans? How can libraries work with BYOD concepts and raise their profile in doing so? The article discusses the theory and practice of these questions based on the introduction to school library use with the app BIPARCOURS / Actionbound.

Introduction

“Even the best school library will become deserted if students are not introduced systematically to its usage and the resulting opportunities to improve and strengthen their reading competency. It is the school librarian’s responsibility to support students’ development towards becoming proficient researchers, to provide targeted assignments to facilitate the discovery of information, and to kindle or expand their enjoyment of the library at the same time” (Sühl-Strohmenger, 2012, p. 151).

School librarians work at the intersection of media administration and services, technical support, and teaching. I worked as the director of a multimedia library at a vocational college (Berufskolleg) in North Rhine-Westphalia for 12 years. I considered it my responsibility to contribute to and expand our students’ information literacy, starting with introducing all incoming students to the services and to the staff of the school library. I believe that this is the foundation on which everything else is built. It was a great feat of strength, given that there were up to 1000 new students each year and I was the only full-time employee.

I constantly tried to optimize this task in terms of organization and didactic approach. I learned early on that as a librarian, I quickly gained professional authority in the eyes of our young adult target groups when they realized that I was able to use “new media” confidently and was not just an old-timey “bookworm.” It was therefore an obvious idea to increase the integration of mobile devices into learning activities, and to turn this into a project for my coursework on media didactics (Educational Media) at the Learning Lab of the University of Duisburg-Essen.

In addition, in early 2015 I received an inquiry from the Media Advisory Center North Rhine-Westphalia (Medienberatung Nordrhein-Westfalen), which was looking for pilot projects for an app for educational scavenger hunts that was in development. In return, they offered guidance for the development of the scavenger hunt. This seemed ideal for my purposes. I also hoped to gain additional insights on BYOD (Bring Your Own Device) teaching models for myself and for the school. For these reasons, I decided to use the app BIPARCOURS (or rather its predecessor, Actionbound, as BIPARCOURS had not yet been published) in order to implement a mobile-device supported introduction to library use for incoming students.
Aspects of designing a mobile-device supported educational program

Prior to implementing this type of educational program, thoughtful planning and a thorough analysis of existing resources and goals are indispensable. At a minimum, they should include the following aspects, which will be discussed below:

1. Program objectives
2. Target groups
3. Market analysis
4. Existing resources
5. Learning/teaching objectives
6. Effects of device-supported learning
7. Organization and timetable
8. Potential analysis

1. Educational goals and objectives

Possible goals of the use of digital media in educational programs include: image enhancement; reduced workload; conservation of resources; feedback, etc. The specific objectives for the scavenger hunt app at our vocational college are discussed below.

The main educational goal was the introduction of around 40 incoming classes per year to the school media center. These introductory sessions need to happen during the first few weeks of the school year, so that individual students, classes and small groups, can subsequently use the library.

The main goal of the introductory session is to convey to the students that the school library - and libraries in general - is a pleasant and helpful place, to introduce them to the staff, and to lower psychological barriers around libraries as an institution. Basic rules of usage and why they exist are also introduced in a focused manner, so that they do not need to be explained to individual students and discussed repeatedly. Additionally, all students need to get an initial introduction (as positive as possible) to the library collection and services. Further goals are an introduction to the classification system and locations and improved research competencies.

Up until now, I, the librarian, in a fairly “classical” teaching style, conducted these introductory sessions: PowerPoint-supported lectures in the auditorium (which is located near the library), alternating with exploratory units in which small groups of students scouted the library with the help of worksheets. A drawback of this approach was that it needed to be completed by the autumn break, i.e. within six or seven weeks. The very contact-intensive and therefore exhausting implementation depended on a single person. As a result, the desired program was often cut short and only partially implemented.

The necessary coordination of the schedules of 40 classrooms and their teachers required an inordinately high organizational effort. The teachers had little flexibility and few opportunities to schedule the introductory sessions for a time when they fit the curriculum. In addition, giving feedback and recording the results of the exploratory units was only possible intermittently. Corrections or individualized success monitoring of 1,000 students was not feasible, and the use of resources was high. For the worksheets alone, up to 2,000 photocopies were needed per year. The auditorium, which is used by the entire school, was reserved for the library for more than 50 periods during the first few weeks of school (for technical reasons, the lectures could not take place in the library). This resulted in repeated conflicts of interest, further reducing the flexibility in the schedule.
This was the situation in which the inquiry from the Media Advisory Center North Rhine-Westphalia arrived. Last year, the Center wanted to develop and distribute an app specifically for educational scavenger hunts and was looking for partners for its pilot project to test the app and develop best-practice models. The Media Advisory Center supports educational partnerships between schools and other public institutions, such as libraries, museums, music schools, etc. and is always looking for opportunities to enrich those partnerships. The target publication date for the app was Spring 2015. The state did not develop the app “BIPARCOURS” from scratch; rather they licensed and further developed the app “Actionbound,” which was originally developed for geocaching and was already in use for a variety of scavenger hunts, including educational ones. The app can be tailored to a variety of subjects and search-and-answer options.

There has been broad discourse taking place in school libraries around Germany on how to raise their profile by using media educational services, as evidenced by the publication of the first book on the topic of gaming and libraries (Deeg, 2014). Some thoughts by social media advisor Christoph Deeg describe very nicely what I had in mind with this project:

You do not need to build the ultimate game and of course you must remain a point of contact in the real world. And yet such services can go far. On the one hand, you are creating new and exciting opportunities - and you do not have to program the app yourself. It already exists. On the other hand, you, the librarian, will learn how to use mobile options like an app and how to turn it into a game. Finally, you will become an innovation leader in your field and you ensure that people notice you as an institution that can do more than book loans, literacy support etc.” (Deeg, 2014, p. 128).

2. Target groups at the vocational college
The target groups at vocational colleges in North Rhine-Westphalia are very heterogeneous. There are part-time vocational students in the dual school/apprenticeship system (usually attending school for two days per week), as well as full-time courses of studies that allow students to attain a higher-level degree (e.g. finishing commercial high school). Other students who did not finish school or land an apprenticeship may attend remedial classes. In addition, there are older adults going through retraining because they can no longer work in their previous profession for various reasons. Then there is the professional school, which is attended by students with work experience who are looking for career advancement opportunities. The vocational school Bonn-Duisdorf has two main branches: The Business/Commercial Department, and the Agricultural Department, with significantly different student bodies. The business branch is much larger, so that the persona outlined below is more typical of this branch. The agricultural sciences classes are often very large and extremely heterogeneous regarding prior educational experience. It is therefore impossible to pinpoint a “typical student persona.”

Typically, students are 16 to 18 years old when they enroll at the vocational college. They have finished middle school (Realschule), grew up in a small town outside of Bonn in a family in which no one has ever taken the university entry exams (Abitur), and they attend a commercial course of study. Roughly half of the classes at our school (average class size 23) consist of relatively homogeneous groups representing this type of student. The other half consists of widely divergent groups, e.g. some classes are primarily male, some significantly older, some have significantly more or less prior education, and some are very heterogeneous.

2a. Prior experience and motivation.
Unlike many other countries, Germany does not have a national library law or mandatory school library regulations. It is estimated that only around 20 percent of all schools have libraries that comply with professional minimum standards. There are, however, no reliable statistics. In North
Rhine-Westphalia, school libraries are not rooted in institutional or legal regulations at all, exacerbating the situation. Regular brief questionnaires asking incoming students about their prior experience with school libraries confirm this.

When introducing the 16 to 18 year old incoming students to the vocational school library, it must therefore be assumed that most of them have no prior experience or familiarity with library use. Since few families, esp. those with lower levels of education, make it a habit to visit public libraries, many students have no concept of what a library can contribute to their studies or to their life. Their image of a library is a collection of old books, which many consider an antiquated medium. Most have done well enough in their previous schools without the help of a library, and it is unlikely that they will be able to anticipate any personal gain from using the school media center, or that they would be curious and motivated to use it. At best, any motivation for the introductory lessons is due to the fact that these lessons take place in different rooms, with different staff and methods, and thus offer a change from the usual school routine.

The use of "modern" media clearly helps to motivate students and raises their curiosity, especially given their antiquated image of a library. Psychological barriers are more likely to exist around the use of books and catalogues than the use of computers or mobile devices, which almost all students own. Many vocational school students come in with the expectation that lessons will be delivered in a traditional style, and that they will be expected to take notes and memorize the material, rather than take an active role. This seems to be based on their prior experience at middle school (Realschule). Especially among the part-time students in the dual system, there is often noticeable resistance to the idea of having to physically move from one room to another. Some feel that it is too juvenile; others think of their school days as a break from their often-demanding workdays and are reluctant to be physically active. It is therefore necessary to overcome this initial skepticism. This can be accomplished by a personal address delivered by the staff; by an explanation of the purposes of this teaching method; and also by using an "interesting" medium, which is usually associated with leisure time. Once they realize that the librarian is not just a book worm, but an information services provider and media educator, she will gain professional authority in their eyes and they are more likely to follow her suggestions and trust her advice.

3. Market analysis
A market analysis can examine various aspects. Part of the analysis should be whether there are similar products, or even products that can be put to immediate use, which would simplify or even eliminate the need for a resource-intensive development phase. Further, the available "digital tools" need to be tested for user friendliness and usage costs. In the context of this project, the use of BIPARCOURS was a given, due to the reasons outlined above. Although a market analysis of other available educational apps and library tutorials was carried out, it will not be presented here.

4. Existing resources
To ensure the most efficient planning and implementation, preparations should include an analysis of existing resources. Possible aspects are:
- Do any content-related concepts already exist?
- Which staff resources are available internally?
- Which external resources and supports are available (e.g. IT department, educational partnerships, other teaching staff)?
- Which technologies are available?
5. Identifying learning & teaching objectives

The primary goal for an initial introduction to library use can be described as follows: The school library - and libraries in general - shall be perceived as a pleasant and helpful place. This includes getting to know the staff and lowering psychological barriers. "The introduction to library use has as its main goal to demonstrate to the students that they can personally benefit from it." (Deutscher Bibliotheksverband DBV, 2016)

Basic rules of usage and their purpose need to be introduced, so that they do not need to be explained to each individual student and discussed repeatedly. Students should get an initial (positive) impression of the collection and services. When designing the app, I used assignments and teaching objectives that had proven to be useful and practical during my twelve years of teaching at the school. This will by necessity be an ever-evolving compromise between the desired goals (know, understand, apply, and accept all rules) and the fact that time is limited to one period and most students have no prior library experience and little understanding of the reasons for the library's existence. The assignments were developed and modified during twelve years of teaching at the vocation school.

5a. Content structure.

For this vocational school project, all assignments used in the previous years were collected and sorted into areas and levels of competency according to Euler/Hahn, in order to be able to organize and classify them. Areas of competency according to Euler/Hahn (Kerres, 2013) are:

I. Knowledge
   1. Remembering
   2. Understanding
   3. Applying
   4. Analyzing
   5. Evaluating
   6. Creating

II. Skills
   1. Producing, transforming (cognitive stage)
   2. Being experienced (associative stage)
   3. Applying routinely (autonomous stage)

III. Attitudes
   1. Being interested
   2. Tolerating
   3. Integrating

All assignments in the first part of the introduction are intended to develop a basic understanding of the library and to stimulate interest in its further use. They are located on the lower levels of the areas of competency of Knowledge (cognitive) and Attitudes (affective), which is typical of an initial contact that is limited to one lesson. Two assignments in the Knowledge area of competency were intended to explain the purpose of a rule so that it would be easier to accept and to comply with it. In the previous teaching method, these assignments were discussed with the group in dialogue form, where the personal connection led to increased acceptance. Creating the same effect in the context of an online app is challenging. The basic concept is to get students to engage with the topic in response to a task that is perplexing and difficult to solve. Two questions from Level 3 are a preview of a later part of the introduction, which will explain the classification system and some research techniques. Here, too, experience had shown that staff often needs to
provide further explanations to help complete the assignment. This was in fact a desired effect, since it allowed staff to get to know the students, and needed to be preserved in the new teaching method.

The affective goal of "getting to know the library as a pleasant, non-intimidating and useful place" takes priority over all others, as it is the basis of further learning experiences, which will subsequently take place regularly during the students' one to three years at the vocational college. Reaching this goal via specific tasks is difficult, however. It is hoped that the sum of all assignments intended to get students acquainted with the collection and services will contribute to reaching this goal. Furthermore, the questions and the scavenger hunt as a whole should be designed in a way that they are perceived as positive, and encourage conversation.

5b. Structuring the assignments.

The assignments for the introductory library session are divided into three topics: Orientation (collection, room overview, general usage); rules of use; and computer use (rules and technical issues). They can also be assigned to three levels of relevance, which I will call "indispensable," "desirable," and "supplemental." All students should be able to solve the tasks that are considered "indispensable" to ensure that they are able to use the library in a meaningful way. The problems can also be classified according to the types of activity necessary to solve them and according to the locations that need to be visited. This yields three activities: Browsing the room/perusing bookshelves; sitting at the computer (for computer-related questions and tutorials); sitting at a desk to read guidelines etc. Additionally, the level of difficulty of the assignments should be assessed; it is, however, generally identical to their relevance.

There are four criteria that influence the sequence of the tasks in the scavenger hunt:

1. Topic
2. Relevance
3. Level of difficulty
4. Location/activity

After examining all criteria, I decided to arrange the problems in the following order:

1. Important and easy (19 questions)
2. Important and moderately difficult (3)
3. Desirable and moderately difficult (11)
4. Supplemental and difficult (3)
5. Supplemental and easy (1)

This will ensure that all students gain indispensable insights. For the less-able students it has the additional advantage of giving them a sense of mastery. For the students who work more quickly, the questions are increasingly challenging. There is also a bonus question (cf. 5.), in case there are students who work very fast.

At the same time, there should not be too many location changes (bookshelves, computers, desks), and the sequence of the questions should be methodical and offer variation (multiple choice, free text, photo, QR-code). In addition, the tasks are associated with certain "stations" of the scavenger hunt. Each team starts at a different station to avoid everyone working on the same problem at the same time, which would cause congestion in the library.

Another issue to be considered when formulating the problems and responses is the need for feedback and additional help. Looking at the areas where, based on my experience, additional support is often needed, a pattern emerged showing that those areas are largely identical with the difficulty of the questions:

1. Simple questions: No help necessary; at most a hint to check the guidelines or IT rules (in-app, printed, on homepage)
2. Moderately difficult and difficult questions: In-app support with additional help as needed, or for incorrect answers.

In summary, one can draw the following conclusions for the content design of the app: There were 37 questions, which needed to be as varied as possible in their methodology and sorted according to topic, relevance, difficulty, and location. Furthermore, students needed to have access to additional support, feedback, and information.

5c. Evaluation of responses.
The team gets positive feedback for each correct answer. For an incorrect answer, students get one or more tips on how to find the correct answer, a clue on where to find further information, or some feedback explaining why the answer is not correct, along with a request to give it some more thought. The team gets points for each correct answer, which will be added up and evaluated. Once the team finishes, students receive a notification with their score. They can also request an email with a more detailed analysis.

Points are assigned as follows: one point each for choosing the correct answer; for the number of necessary steps; and for the complexity of the task. The goal is to strike a balance between recognizing the mastery of difficult tasks and appreciating the diligence required to solve many easy tasks. In this way it can be ascertained that all students have a sense of mastery, including those who have limited prior knowledge and who struggle with complex tasks. The idea of deducting points for multiple attempts to answer a question was rejected, since the aim is to reward, not punish, an effort to gather additional information. In addition, that approach would be more likely to measure students’ prior experience, rather than their progress. Students with prior experience are already at an advantage, since they can solve more problems in the same time frame. The groups can compare their scores within the class and compete against each other. This has so far proved to be a motivating factor, rather than a source of frustration. The highest score in each class can be compared against other class scores as well. We hung a poster in a central location of the school that lists the five top scoring classes each day. In this way it may be possible to encourage the teams within a class to help each other, in order to achieve the best possible overall score. It is also good public relations for the library programs. Based on previous experience, classes from all courses of studies were represented among the top scorers, and the anticipated frustration of classes that might be at a disadvantage due to their composition did not materialize.

5d. Teaching & learning strategies.
For example, an introduction to the library for an elementary school class based on concepts of library pedagogy will primarily seek to give an orientation and improve the students’ information literacy by playfully familiarizing them with the different kinds of media and their specific features. In these sessions, students become acquainted with various media services and acquire skills related to the subject-specific selection and use of media for purposes of reading, gathering information, play, and entertainment, according to their interests and needs” (Keller-Loibl, 2009, p. 97). Although in this example, Keller-Loibl talks about elementary school students, the same applies to other age groups, especially since motivating students to engage with the material was the main goal of this project. I believe that the aspect of motivating students through active and exploratory learning is of prime importance in this case. Besides, students at the upper secondary level (Sekundarstufe II) need to get used to working independently, and a subject such as this one, which is not part of the regular curriculum, is a good opportunity to experiment. To quote from the definitive book on applied school library science, *Praxisbuch Schulbibliothek*: "Didactically speaking, a constructivist focus is appropriate for working at or with the school library. Most
school libraries — unless they are excessively rule-bound — are places in which enabling didactics are suitable" (Wolf and Schuldt, 2013, 109).

As opposed to strictly digitally delivered lessons, here the school staff is present and able to intervene or help at any time when students’ prior knowledge or learning strategies are insufficient. Over the course of several years, certain areas were identified where most students lack the necessary knowledge for independent exploration.

The social format chosen for this project is the small group, as it is most appropriate in terms of content, motivation, and organization of the lessons. The two to three members of each team can compensate for each other’s gaps in knowledge, develop solutions through communication, and encourage each other. Larger groups are avoided, as they often end up working additively, and important insights reach the individuals only partially. On the other hand, dividing each class into ten small groups ensures that the staff does not have to answer too many questions individually.

In a media-supported scavenger hunt, responsibility for the expository parts is transferred to the students through the use of screencasts etc, thus affording the librarian more time and energy for individual encounters. This is an effect that can frequently be observed when implementing active learning lessons - the prep work is time consuming, but the lessons allow for a lot of individual support when implemented. The app gives students immediate feedback, as well as their scores, for correct responses. The librarian and other staff can easily obtain automated analyses and adapt individual questions, or even the overall approach, as needed. If individual students or classes diverge significantly from the expectations, feedback and evaluations can be sent to the homeroom teacher to discuss possible next steps.

6. **Effects of media-supported learning**

Media-supported learning can have a positive impact on various aspects of learning. The question whether the intended medium or device has the potential to reach the desired effects should be carefully considered early on. The effects that were observed in the course of this project are outlined below:

1. **Motivation**
   a. Novelty effect: Students associate smartphones - which are typically considered disruptive in the classroom - with pleasant leisure time.
   b. The library is seen as offering modern technology, rather than just presumed antiquated media.
   c. Playful competition: Immediate feedback and the opportunity to compare scores among teams and classes act as incentives.

2. **Duration of learning (sum of all team members)**
   a. The amount of time available is pre-determined; however, students who need more than average support are always able to choose their own speed, including the expository parts, and explore the subject in more or less depth.
   b. Some students are able to delve deeper during the time available and do not need to "wait" for others.

3. **Clarity**
   a. Is not significantly different than before: The explanatory texts and tutorials are similar to the old PowerPoint presentations; however, more graphics can be used for added clarity.

4. **Problem-based learning**
b. Remains the same: The previous method (exploration through assignments) was simply transferred to another medium.

5. Cooperation
   a. Remains the same for the exploratory parts, i.e. students work in small groups.
   b. During the expository parts there are more opportunities for communication and mutual assistance, which would have been disruptive in the plenary lectures.
   c. Library staff can use the time to focus more on building individualized and supportive relationships.

6. Flexibility
   a. Class periods can be used more purposefully and when it makes sense in terms of the curriculum and schedules (including periods taught by substitute teachers filling in on short notice).
   b. The implementation is less dependent on specific staff members, and
   c. Not dependent on availability of stationary IT equipment or rooms.

7. Efficiency
   c. Grading and feedback on the results are simple and automated.
   d. Different versions of the scavenger hunt, differentiated by contents or level of difficulty, can easily be developed.
   e. The acquired knowledge base can be used outside of introductory sessions as well.
   f. Potential for easy development of additional, similar lessons.
   g. Lower copying costs.

During the development and implementation of the app it became clear that one of its main advantages lies in the fact that students get immediate feedback for each assignment, as well as tips for improvement or correct answers when applicable. With traditional lessons, it is impossible to even come close to this level of detailed feedback and collection of results, considering that each class has an average of 25 students. An additional positive effect that we observed relates to the students’ stamina when answering the questions. With the traditional use of work sheets, we observed frequently that students were less and less motivated as time went on. Using the app had the opposite effect: The more points they collected, the more motivated most participants seemed to be. There was another unexpected content-related side effect: The apps BIPAR COURS and Actionbound have an option to email a detailed analysis of each team’s performance to a team member. This can be a welcome opportunity to sensitize students to the topic of handling personal data.

The app also has some other helpful functionalities for the library: The analysis and assessment options give detailed feedback about the library’s services and offer new insights into its users’ interests and abilities. It is an additional advantage of an educational program for mobile devices that it can help the library raise its profile as a leader in experimenting with BYOD concepts for schools. There is great interest in this subject among teachers and in the educational system in general. The development of the app also prompted the school to discuss the purchase of tablets as well as the long-overdue installation of Wi-Fi in the school library. This effect is frequently observed with similar projects.

7. Organization/time table

It is prudent to create a precise organizational time line before starting a project to introduce a new medium. The following questions should be considered:
• When do which steps need to be finished at the latest?
• When are technical or room resources available?
• When is staff available?
• When can partners be contacted?
• Are there backup plans (e.g. if devices or Wi-Fi are not available)?

8. Potential
Based on our experience up to now, I believe usage of the app BIPARCOUORS or Actionbound has great potential for further (library-related) topics. In addition to a second part of the introduction to library use, which would include the classification system and catalogue research, many other topics are imaginable that students could work on independently with the help of the app. Examples include modules on focused internet research; on the search for information sources; data security; copy and image rights; using nonfiction books; and choosing fiction as reading material.

For some general topics, tutorials already exist and it would be easy to link to them to be used as a knowledge base without having to do much additional work. This would significantly reduce the staff needed to develop an app. An introduction for new members of the teaching staff would also be an option. In addition to the general terms of use, it could point new staff to the services of the teachers’ library. A medium-term goal might be to get the students to build a knowledge base, e.g. in the form of a wiki based on the assumed potential of a scavenger hunt app for further modules and additional uses, I believe that the increased effort required for a thorough planning of the initial development of the scavenger hunt is well worth it. Subsequent projects should be easier to implement based on the thorough prep work for the first one. Additionally, the library will emerge as a strong partner for BYOD concepts in schools. I am convinced that the didactic approach works: Exploring and experimenting in order to strengthen students’ and teachers’ information competency.

References

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