

Computer Game Design Classes: The Students' and Professionals' Perspectives

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Abstract. There are multiple reasons that justify teaching computer game design. Its multi-aspectual nature creates opportunity to develop, at the same time, creativity, technical skills and ability to work in team. Thinking of game design classes, one needs direction on what to focus on so that the students could benefit the most. In this paper, we present results of a survey on both the students' and working professionals' expectations from game design course and opinions on game designer job. Although sometimes consistent, the answers from the two groups often reveal significant discrepancies. We believe that the results presented in this paper can help improve the quality of computer game design courses and make their learning outcomes more compatible with the needs of the computer game industry.

Keywords: computer game design, teaching game design, game design classes, students' and professionals' expectations.

1. Introduction

Game design is the process of creating the rules and content of a game, beginning with a general idea of a game, and ending with a detailed documentation describing all the elements that make up the game: conceptual, functional, artistic, and others (compare, e.g., Bates, 2004; Rollings and Morris, 2003; Schell, 2008).

There are multiple reasons for which the game design can be considered as an interesting subject of educational classes. The students can be directed towards development of creative thinking through the conceptualization of game story and logic, exercising analytic thinking by comparing and dissecting existing games, and learning how to work in teams with division of responsibilities (see, e.g., Masuch and Nacke, 2004). Computer game design, in particular, creates an opportunity to acquaint the students with up-to-date and state-of-the-art technologies and techniques in computer programming, graphics and animation, to provide them with practical experience in many computer science areas (including those which are often over-theorized, e.g., software engineering or artificial intelligence) and also to expose to them the performance limits of current-generation computers (see, e.g., Schaefer and Warren, 2004).

Notice though, that computer game design, in contrast to game programming (i.e., the process of transforming game documentation into a working game) does not necessarily require special technical knowledge. Depending on the kind of educational institution, aims of the course, and the level of student abilities, the game design classes can include more or less technological issues, or even be limited only to non-technological aspects. Notice also, that teaching computer game design can be used as a vehicle for teaching game programming, even for non-programmers, when a very simple programming language is used, such as Rey (Baszuro and Swacha, 2008).

The great advantage of teaching computer game design is the ease with which the pupils can take an interest in a topic closely related to the form of entertainment they know and mostly like (see, e.g., Overmars, 2004; Pivec and Kearney, 2007). On the other hand, learning game design can be a first step on a very interesting professional career path: the video game industry has been growing fast for years (Pleva, 2004), with global revenues surpassing 40 billion dollars already in 2007 (Caron, 2008).

It is no wonder then that teaching computer game design gained significant popularity in recent years, not only in high schools, but also in elementary schools and universities (Gestwicki *et al.*, 2008; Overmars, 2004; Robertson and Howells, 2008; Schaefer and Warren, 2004). One of the main questions related to teaching computer game design is the scope and priorities of the course. Although these are, in an obvious way, affected by the school curriculum, the deciding factors are the students' expectations and the body of knowledge considered important by computer game industry professionals. Interestingly, in spite of the abundance of the literature on computer game design and education, discussing what and how could be taught, no one managed to provide a valid answer to the aforementioned question. We believe that this question can be answered best by the people most involved: the students and computer professionals themselves. Hence the idea of a short survey addressed to these two groups that could shed some light on possible answers.

In this paper we shall describe the methodology and implementation of the survey, present its results, and, finally, draw some conclusions that can be helpful to the tutors preparing computer games courses. But first, we shall discuss the related work.

2. Related Work

There were two main areas of literature relevant to our research: one concerning the topic of game design, and the other – the topic of teaching game design. Whereas the first one describes what could be taught on game design classes, the second one gives an idea of how it should be done, helping to identify possible problems, and offering solutions based on practical experience.

As for the first of the mentioned areas, although, as Schell (2008) put it, there is no “unified theory of game design”, most game design textbooks share similar concepts of what the core elements of computer game design are, and what the merits of a well-designed game should be (Crawford, 1984; Rollings and Morris, 2003; Rouse,

2001; Salen and Zimmerman, 2004). Some textbooks have extended content, covering development-related topics (especially regarding team management; Bates, 2004; Rollings and Morris, 2003), even to the point of focusing at the technical development process (Bethke, 2003; Meigs, 2003), other deal only with specific game design issues – e.g., character development (Sheldon, 2004) or game feel (Swink, 2009). There are also numerous books on developing games in a specific programming language (e.g., C++ (Thorn, 2007); Java (Brackeen *et al.*, 2004); PHP (Rutledge, 2007); Python (McGugan, 2007); Visual Basic (Freeze, 2001)), yet they usually address the topic of game design in a very limited way – as much as computer science is not computer programming (Wing, 2006), game design is not game programming (Masuch and Nacke, 2004).

The topic of teaching computer game design can be seen as a part of much wider discussion on using computer games in education (see, e.g., Becker, 2001; Pivec and Kearney, 2007; Prensky, 2001; Rosas *et al.*, 2003 and references there). As most teachers involved want to exploit the opportunity of turning students' designs into working games, game design classes are usually combined with game development. Apart from programming courses, there is a tendency to use game creation tools instead of typical programming languages, so that no preliminary programming skills are required. There are a few of such tools designed merely for educational purposes (e.g., Stagecast and Game Maker (Overmars, 2004)), but editors supplied with commercial games can also be used (for example *Neverwinter Nights* editor used in Robertson and Howells (2008) and works cited there), as well as other widely used software (e.g., Microsoft Office PowerPoint, Rieber *et al.*, 2008).

As it has already been mentioned, so far the literature lacked a survey showing what is expected from the computer game design classes by the students and what qualifications are considered important by the game-industry professionals. Still, the review of the literature provided us with a broad set of topics from which the most relevant ones were selected and then used as a basis for the survey questions.

3. Methodology and Implementation of the Survey

The survey was conducted in two independent groups of responders: students and professionals. For both groups, participation in the survey was voluntary (no incentives were offered whatsoever) and anonymous.

The main aim of the survey was to determine the stance of students (potential employees) and experienced professionals (potential employers) towards game design classes. The survey is substantiated on the premise that its results can help improve the quality of computer game design courses and make their learning outcomes more compatible with the needs of the computer game industry.

The survey consisted of ten single-choice questions with predefined answers, grouped in two sets. The first set contained five questions regarding expectations towards game design classes, the second one – five questions regarding expectations towards game designer job.

The survey had a form of an electronic questionnaire, filled out by the responders themselves. The students' questionnaire contained both sets of questions, and was implemented using a Moodle system add-on. The professionals' questionnaire contained only the five questions from the second set, and was implemented using Google Spreadsheets.

The students' questionnaire was offered to 74 information technology students via Moodle system. The survey was completed by 31 of the recipients (ca. 42%).

The professionals' questionnaire was sent to five Polish game developing companies via email, four of them responded. The survey was completed by 9 persons working as game designers or game producers. Although, in absolute terms, the number of professionals' answers is far from impressive, it covers a significant share of the local game development industry, in its current form.

4. Confronting Students' Expectations with the Professionals' Experience

4.1. Students' Preferences and Expectations

The main aim of the first set of questions was to evaluate the general interest in the game design classes and to find out the expectations from the course proposal.

The answers given to the most important question, probing students' will to attend the classes (Fig. 1), prove that the subject of game design is seen by the students as attractive.

There were no negative answers to the question about attending the new course at all. Only 3% of the responders were undecided, whereas 97% of them would be happy to take part in classes on Game Design.

Students' involvement in classes is a result of many factors, one of them being the form in which the course is conducted. The responders were asked their opinion about it (Fig. 2). Vast majority of them (58%) picked collaborative workshops leading to design of a real game as the most attractive form of classes. Case studies of existing games and a laboratory with implementing a game would find about the same groups of followers

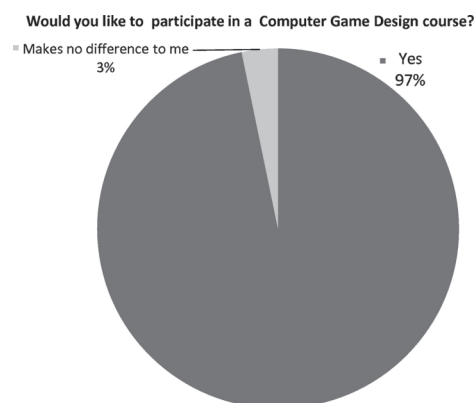


Fig. 1. Students' will to participate in the course.

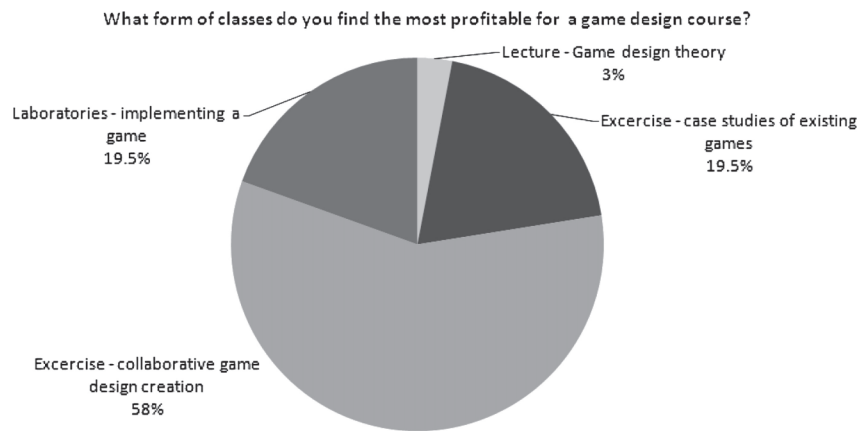


Fig. 2. Preferred form of classes for the course.

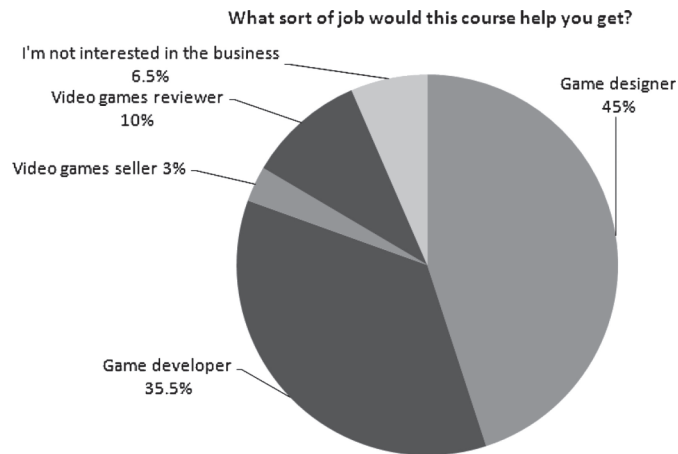


Fig. 3. Game design course as an expected preparation for job.

– each option having 19.5% of voters. The significant number of students choosing the latter option shows that many of them do not realize that game design is not an engineering discipline and one can be a good designer without even basic knowledge of game programming techniques.

The game design course is not intended to be an exhaustive preparation for a particular job, but it can be a firm basis for an educational path leading to certain professions. Students do know, that it is not only a game designer position that they can think of, having completed the course. This option was selected by 45% of responders (Fig. 3), while others voted for positions of game developer (35.5%), video games reviewer (10%) and video games seller (3%).

Most of the poll participants chose a game designer position that would best fit the course profile and another question probed students' expectations from being employed

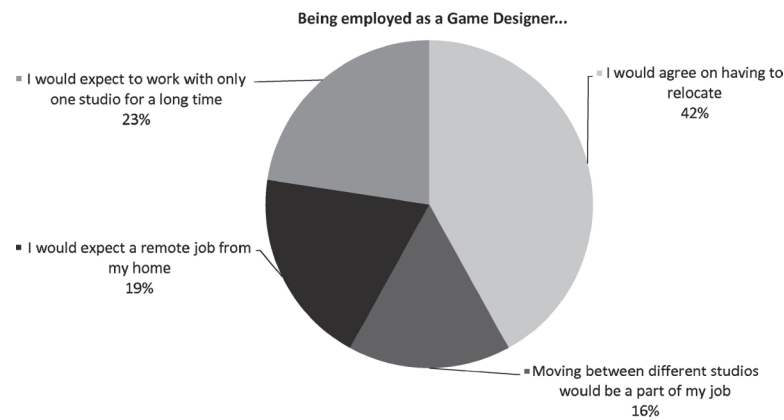


Fig. 4. Anticipated form of a game designer's employment.

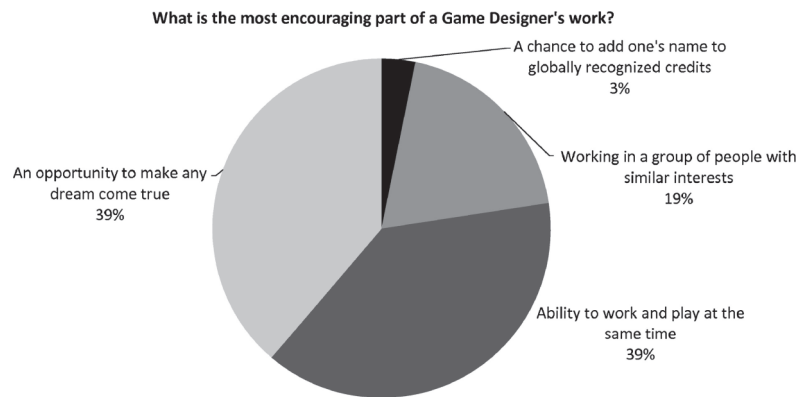


Fig. 5. Intangible attractiveness of a game designer's work.

as a game designer. In real circumstances, employees of game development companies work in very dynamic environments, often having to relocate or work remotely. The question was supposed to verify the respondents' awareness of this fact (Fig. 4). About 42% of them admitted that they would need to relocate in order to find a game designer job. Two smaller groups pointed that they can possibly work from home (19%) or will need to move between different studios on a regular basis (16%). The remaining group of students would expect to be employed by only one game development studio for a long period of time.

Another question being part of the poll aimed at finding out what makes the job of a game designer attractive (Fig. 5). Two equal groups of the responders (39% each) selected the following options: "An opportunity to make any dream come true" and "Ability to work and play at the same time". One can conclude that both of these are somewhat true for the game development business, despite all its challenges. Many students (19%) would also appreciate a friendly working environment with people sharing similar interests.

4.2. Students' Versus Professionals' View of Game Design

The second set of poll questions was given to both students and game development professionals. Thus, the expectations from people employed as game designers, as expressed by both of the groups, could be discovered. In fact, answers given to these questions confronted wishes and hopes (of the students) with the real market demand (as the professionals know it).

A new course taught at any level of education should be well aligned with an existing educational path. In the first question from the second set, both the students and the professionals were asked to select, from a list of fields of knowledge, one subject that in their opinion is the most important prerequisite before starting to learn game design. Obviously, a lack of necessary knowledge among the students can be a huge hindrance for both them and the teachers.

Interestingly, it turned out that the students had a very different opinion on this issue, compared to the professionals (Fig. 6). For students, Audio Video Technologies (35%) and Computer Programming (42%) were the most important, while vast majority of producers (67%) chose the Video Games Market.

When it comes to the practical assets required from game designers, answers given by both of the groups were a lot more similar (Fig. 7). Creativity and multidisciplinary knowledge (selected by 74% of students and 89% of producers) is more important than "Communicativeness and ability to sell ideas to others" or "Ease at creating and using documentation". The latter one, as well as handling any studio-specific software is a type of knowledge that can be easily gained as a working experience.

Expectations from theoretical knowledge of a game designer showed significant discrepancies between the two groups' standpoints again (Fig. 8). The producers picked playability theory (44.5%) as the most important one. In students' understanding, knowledge of the game and software architecture is a more significant skill for a game designer (61%).

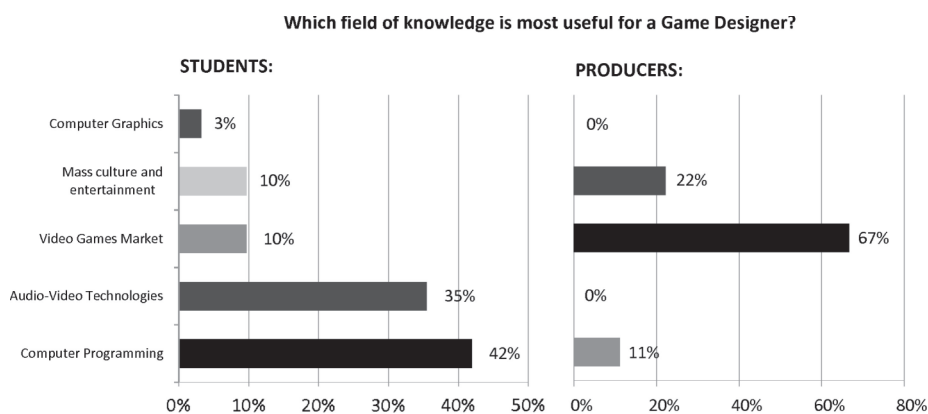


Fig. 6. Knowledge expected from a person taking the course.

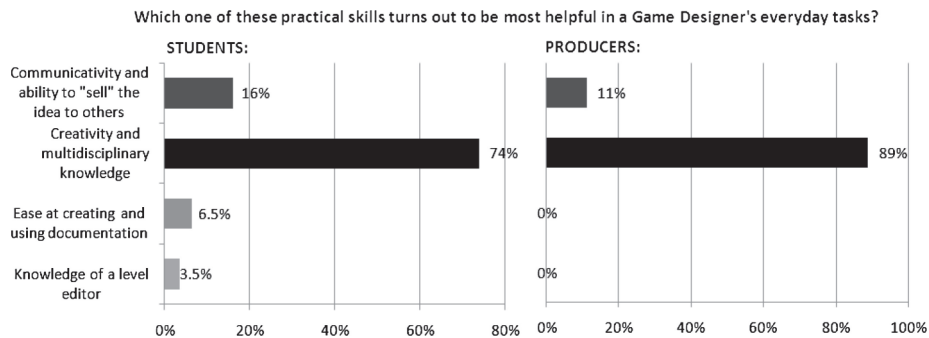


Fig. 7. Practical skills expected from a Game Designer.

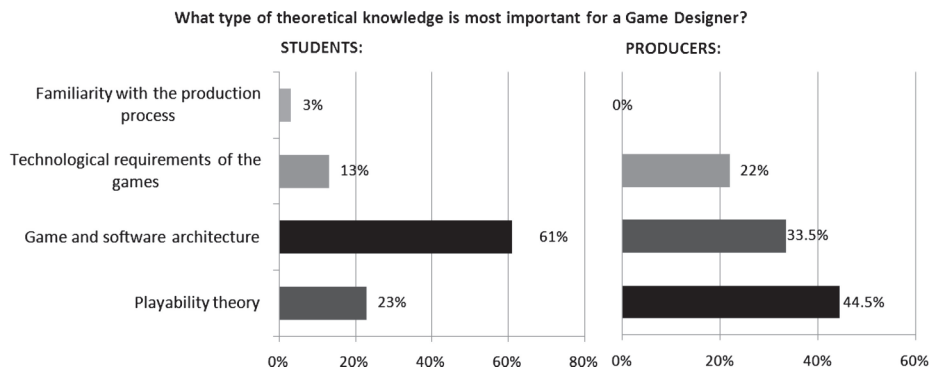


Fig. 8. Theoretical background expected from a Game Designer.

Another question aimed at verifying expectations of the two groups from game designers' knowledge of tools (Fig. 9). Almost 89% of the producers would hire a game designer that does not know any particular tools, if only he was supportive with innovative ideas. Students however pointed mostly at multimedia software (45%) and tools specific for a particular studio (39%). These are indeed important, but comparably to the question about practical skills, can be learned during work: even an excellent knowledge of software will not make a good game designer.

The last question of the poll asked about the most important field of the game design (Fig. 10). A majority of the producers selected "Defining and solving logical problems, artificial intelligence issues" and "Game stories, environment and playability issues" (44.5% each). Students chose the former (42%), as well as "Modern technologies utilized in games" (32%).

5. Conclusions and Future Work

The answers given to the very first question of the survey are already optimistic: the students are interested in game design classes, which means the work (including this survey) aimed at making better game design educational programs is worth the effort.

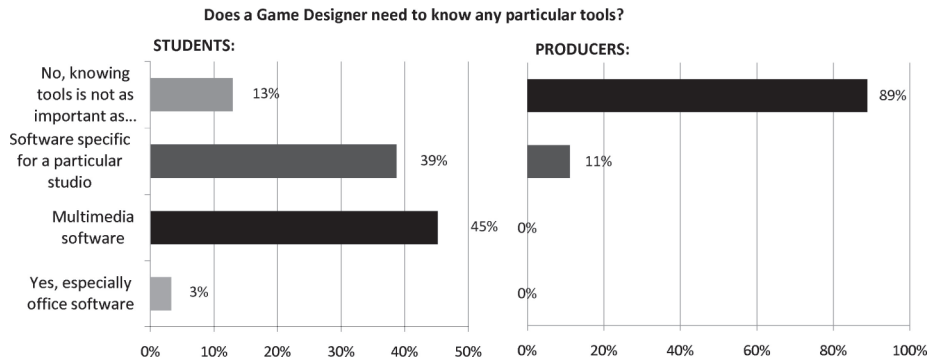


Fig. 9. Requested knowledge of game design-related tools.

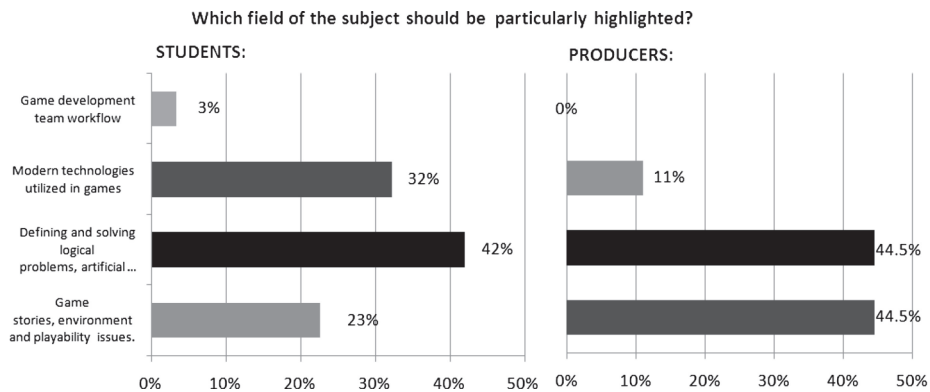


Fig. 10. The main emphasis of the course.

Before conclusions can be drawn about how game design courses should be prepared in order to best fit students' expectations and serve the educational purpose, the differences between the students' and the professionals' standpoints need to be highlighted. In some cases, the answers given to the survey questions proved that the two environments do not share the same idea of the profession. The reason of such a noticeable discrepancy is most likely different set of priorities that the two groups value. Naturally, for the video game professionals, the answers were given based on long-term experience and confronted with strictly business-related criteria, like: work efficiency, seamless cooperation with other project members, responsiveness to the market demand. The students on the contrary, seem not to go beyond academic reality, where skills are, or at least are often expected to be, directly mapped to subjects and fields of technical knowledge. The proposed subject would therefore be a notable exception to this rule, with particular focus on creativity, which in fact is in common interest of both the environments.

In this relatively young discipline, there are no well verified teaching methods that guarantee educational success. Instead, many educators decide to develop their own teaching methods and adjust them based on their experience and received feedback. The

questionnaire provides students' response to one very valuable question concerning the form in which the game design classes should be led. Based on this information, one can assume that a group-based game design creation process would be a very well received way of delivering the knowledge. The other two mentioned methods show a good promise of diversifying the classes, and due to that – keeping the students interested in the course.

Regardless of the chosen teaching methods, the purpose of the second part of the questionnaire was to evaluate, what should be the actual content of the game design course. Also in this case, the views of the students and the professionals are in major extent different, having one common denominator: creativity. Conducting classes in groups and encouraging cooperation between individuals will constitute a positive stimulus in developing this soft skill. At the same time a number of other skills that are expected by the professionals, are underestimated by the students. This can be resolved by a game design course to a certain extent. Expectations from the subjects, shared by responders from both of the groups in the final question of the survey, as a matter of fact, determine the substantial areas of the course. In further perspective however, adjusting a larger portion of the educational curriculum to this exceptional profession would be welcome, equipping the students with the necessary entry-level knowledge and giving a better understanding, what exactly being a video game professional means.

The conducted survey was conceived as short and uncomplicated from the very beginning. Knowing its limitations we are very satisfied with the interesting results it brought, showing the differences in students' and professionals' views. We believe that it can serve as a base for further research in the same lines, aimed perhaps at many, diversified groups of students and having an international scope.

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Kompiuterinių žaidimų projektavimo pamokos: mokinių ir specialistų požiūriai

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Yra daugybė priežasčių dėl ko verta mokyti mokinius projektuoti kompiuterinius žaidimus. Jos daugiasavybinė prigimtis suteikia galimybę plėtoti techninius įgūdžius, skatina kūrybiškumą ir gebėjimus dirbti grupėje. Mokant tokio projektavimo, visų pirma, reikia nustatyti, ko, būtent, reikia mokyti, kad tai būtų naudingiausia mokiniui. Šiame straipsnyje pateikiami tyrimo rezultatai atsižvelgiant tiek į mokinių, tiek į specialistų lūkesčius bei nuomones apie kompiuterinių žaidimų projektavimo kursą ir projektuotojo darbą. Abiejų grupių atsakymai kartais sutapdavo, bet dažniausiai jie buvo visiškai priešingi – tai ir analizuojama straipsnyje.