

**Clarify the design and geographical research methods
Using geographic information systems
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بحث ميداني في استخدام جغرافية المعلومات لدى طلبة الجامعات

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الملخص

من المتوقع أن تؤثر مناهج التدريس بصورة معقدة جدا أو بمختلف الاتجاهات الرئيسية ليست موحدة في النمط بما فيه الكفاية في المصطلحات من الأنظمة المعقدة (الفصل الاول)، يمكن تصنيفها النهج التقليدي والتصميم العقلاني. وكما سنرى فيما بعد، المناهج البديلة هو استنادا إلى إدارة التنوع والاختيار. وفي العقود الأخيرة، وقد أنشأت عدة بلدان نامية آليات تحديد أولويات البحوث من خلال التعرف على طبيعة الفكر للمستخدم، تطالب دراسات واختبارات وقد أظهرت تجربة العقدين الماضيين أن هذه الآليات لم تحل المشاكل التي تؤثر على نظم البحوث. إن السبب هو أن آليات الطلب او التدريس الاصولي ما زالت منظم وفقا لرؤية خطية من العلم وليس حل مشكلة التفاعل بين الباحثين والمستخدمين، وبالإضافة إلى ذلك، لا تؤثر على جودة البحوث ، فاستخدام وسائل التعليم الحديثة بطرق متطورة تجعل من نسب النجاح مرتفعة. النهج الثاني، استنادا إلى نظريات المطبقة في البحث (الفصل الثاني)، يقوم على فرضية أن تعريف الأولويات البحثية (عملية معقدة) تتطلب آليات أكثر مرونة من مجرد مطالبة تحديد الهوية. وينبغي لهذه الآليات تعترف تعقيد النظم التي تسعى إلى التأثير وقدرات جميع الجهات الفاعلة في نظام الابتكار. ثم، يتم تنظيم عملية تحديد الأولويات البحثية واستكشاف لتحقيق التوازن في استغلال المعارف والقدرات القائمة واستكشاف الفرص الجديدة انظر الى الدراسة الميدانية التي تم تطبيقها على الجامعة العراقية) واختلاف نسب النجاح بين التجريبتين وهذا يثبت صحت النظرية التعليمية الحديثة والمواكبة للنهضة المعلوماتية .

Abstract

It is expected that curricula affect very complex or the various major trends are not uniform in the style enough) (in terms of complex systems (Chapter I), can be classified as traditional and design a rational approach. As we will see later, alternative curricula is based on management diversity and choice. In recent decades, has established several developing countries to identify research priorities by identifying the nature of thought to the user mechanisms, calls for studies and tests have been the past two decades, experience has shown that these mechanisms did not solve the problems that affect the research systems. The reason is that demand mechanisms or teaching the fundamentalist still, according to a written vision of science and not solve the problem of interaction between researchers and users entrepreneur, and in addition to that, do not affect the quality of research, and the use of modern teaching methods sophisticated ways

Make of the success rates are high.

The second approach, based on the theories applied in research (Chapter II), based on Vrzhih that the definition of research priorities

(A complex process) requires more flexibility than just a claim identification mechanisms. These should recognize the complexity of the mechanisms systems that seek to influence and the capacity of all actors in the innovation system. Then, is organizing the process of determining research priorities and explore to achieve a balance in the exploitation of existing knowledge and capacity and to explore new opportunities to see the field study, which was applied to the Iraqi

University) and the different success rates between the two trials, and this proves true, modern educational theory and accompanying the Nhzh informatics.

Introduction

Geographic Information Systems, the And teaching -in, has been developed and used for teaching Geographic and statistics. The system was used in a basic Identify symptoms ground and accounts quantity 182 students. The students were requested to answer questions in the gist and therefore monitored continuously during the semester. Data available include grades on a status exam conducted at the beginning of the course Application gis, a final grade and data gathered in the Geographic Information System. A classification of the students is considered, using the data gathered in the system; a Good student should be able to solve a problem quickly and get it right, the “diligent” hard-working Learner may take longer to get the right answer, a guessing (Poor) student will not take long to get the wrong answer and the remaining (Unclassified) apparent non-learning students take long to get the wrong answer, resulting in a simple classification GLUP. The (Poor) students were found to show the least improvement, defined as the change in grade from the status to the final exams, while the Learners were found to improve the most. More detailed analyses indicate that improvements in knowledge are best predicted as quadratic responses to the number of items requested and the time spent on each item. The results are used to demonstrate how further experiments are needed and can be designed as well as to indicate how a system needs to be further developed to accommodate such experiments.

results are used to demonstrate how further experiments are needed and can be designed as well as to indicate how a system needs to be further developed to accommodate such experiments Educational. And explain the use of a demonstration by clarifying the topic in Digital Pictures

With the increasing number of GIS educational systems several types of educational systems have emerged. These include learning management system (LMS), learning content management system (LCMS), virtual learning environment (VLE), course management system (CMS) and Adaptive and intelligent web-based educational systems (AIWBES).

The LMS is designed for planning, delivering and managing learning events, usually adding little value to the learning process nor supporting internal content processes. A VLE provides similar service, adding interaction with users and

access to a wider range of resources The primary role of a LCMS is to provide a collaborative authoring environment for creating and maintaining learning content .

Many systems are merely a network of static hypertext pages but adaptive and intelligent GIS educational systems (AIWBES) use a model of the goals, preferences knowledge of each students and use this to adapt to the needs of that student . These systems Educational tend to be subject-specific because of their structural complexity and therefore do not provide a broad range of content.

The GIS (at <http://tutor-web.net>) used here is an open and freely accessible AIWBES system, available to Altdresen and instructors at no cost. The system has been a research project since 1999 and is completely based on open source computer code with material under the Creative Commons Attribution-Share Alike License. The material and programs have been mainly developed in Iraq but also used in low-income areas (Syria and Egypt).

Software is written in the Plone CMS (content management system), on top of a Zope Application Server. In terms of internal structure, the material is modular, consisting of departments (e.g. math/stats), each of which contains courses (Coordinates drop in the system and conducting statistical operations). A course can be split into tutorials (e.g. And the rules for handling the basics of projections and data information systems), which again consist of lectures (GIS. Basics of Statistics /chain rule). Slides reside within lectures and may include attached

material (examples, more detail, complete handouts etc). Also within the lectures are drills, which consist of quiz items. The drills/ The ability to deliver concepts, not just simple testing. The system has been used for introductory, statistics, Satellite, images, earth, sciences. Typical drill item, after the student has responded (incorrectly)⁽¹⁾.

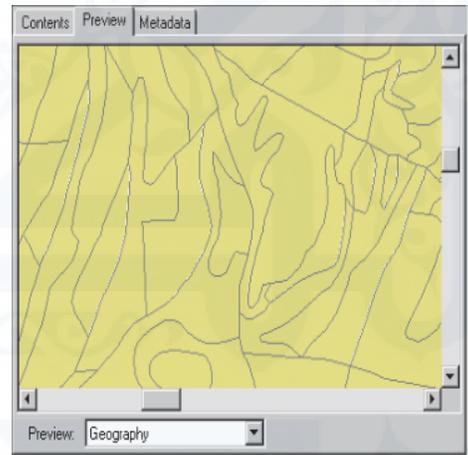
In a GIS analysis project, an analyst faces a variety of tasks that can be grouped into four basic steps. The first step is to convert a question, such as Where is the best place customers are near this store?, into a GIS database design for a new building? or How many potential and an analysis plan. This involves breaking the question into logical parts, identifying what layers of data will be needed to answer each part, and developing a strategy for combining the answers to each part of the question into a final answer. The next step is to create a database that contains the geographic data required to answer the question. This may involve digitizing existing maps, obtaining and translating electronic data from a variety of sources and formats. Figure 1.

A

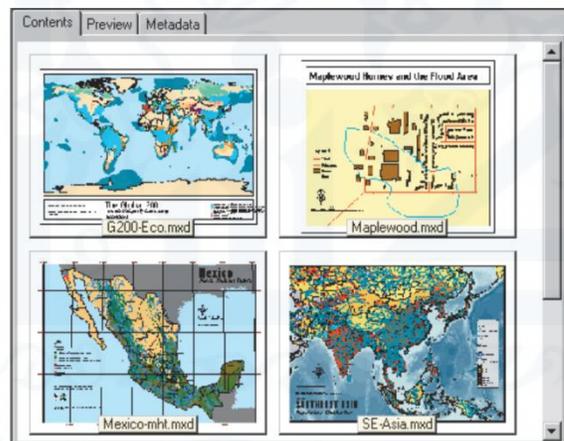
FID	Shape*	FIPS_CNTRY	CNTRY_NAME	SOVEREIGN	F
0	Polygon	AG	Algeria	Algeria	
1	Polygon	AD	Angola	Angola	
2	Polygon	BC	Botswana	Botswana	
3	Polygon	BN	Benin	Benin	
4	Polygon	BY	Burundi	Burundi	
5	Polygon	CD	Chad	Chad	
6	Polygon	CF	Congo	Congo	
7	Polygon	CG	Zaire	Zaire	
8	Polygon	CM	Cameroon	Cameroon	
9	Polygon	CN	Comoros	Comoros	
10	Polygon	CT	Central African Republic	Central African Republic	
11	Polygon	DJ	Djibouti	Djibouti	
12	Polygon	EG	Egypt	Egypt	
13	Polygon	EK	Equatorial Guinea	Equatorial Guinea	
14	Polygon	ER	Eritrea	Eritrea	
15	Polygon	ET	Ethiopia	Ethiopia	

Record: 1 of 55
Preview: Table

B



C



GIS by ESRI Former source

A fundamental aspect of the system is that students can continue requesting and answering *ad infinitum*.

They receive immediate feedback, usually including a detailed solution (see Fig. 1). In-class surveys indicate that students like the system as an addition to traditional homework, particularly the detailed solutions (see below). Naturally, students can monitor their own progress. Several grading schemes can be implemented, but using the last 8 answers, as in the analysis presented here, was the norm until late 2013.

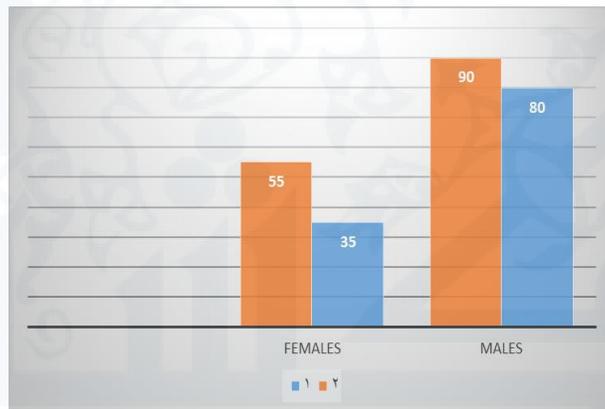
An Item Allocation Algorithm (IAA) is used to choose drill items (questions) for learning, within each lecture. Important aspects of an IAA include the desire to start with easy items and increase difficulty with increasing grade (within a lecture). Given that repetition is known to enhance learning, the IAA also occasionally chooses an item from earlier material (lectures). It is likely to be useful to choose again from earlier mistakes or go to prerequisites if there is no learning, but these have not been investigated to date⁽¹⁾.

Table (1)
Results of the experiment to test a number of students view article

Gender	Number of sample 1	The group used the Internet 2	%	The group did not use modern methods of learning	%
Males	120	80	47.05	35	38.88
Females	120	90	52.91	55	61.11
Total	240	170	100%	90	100%

The work of a researcher based on a field study

Figure 2
Results of the experiment to test a number of students view article



The work of a researcher based on Depending on the table(1)

Figure 2. Tutor-web probability As evidence function used by the item Education The x-y Coordinates the ranked item difficulty and the y-axis gives the probability of the next item, where the depends on the View article

The simply implemented as a probability mass function (p.m.f., Fig. 2), which is a function of difficulty. In addition, the p.m.f

1 GIS by ESRI, Bob Booth and Andy Mitchell, Getting Started with ArcGIS,USA, Printed in the United States of America,2001,pp(11-13).

depends on the grade, thus implementing personalized education appropriate for the student in question. Student surveys are conducted in most courses using the system. A typical example of results is given in Fig. 3, where it is seen that students strongly prefer a combination of on-line exercises and Inductive system homework Test . Although it is useful to know that students appreciate a drilling system, more concrete evidence is needed in order to justify its use. One such is provided using an experimental design which compared groups of students using the system or using traditional homework in a crossover design [4]. The basic conclusion from this experiment was that the difference between the groups was Big and important, both statistically and from the point of view that the confidence interval for the two groups was very tight. From the above results it follows that the system can be used to reduce regular homework considerably, but not replace it completely.

Figure 3. Student satisfaction survey results. Note how the tendency to like web-assisted methods (left panel) does NOT imply that regular homework can be dropped (right panel).

Students 90 lectures belonging to this particular cours

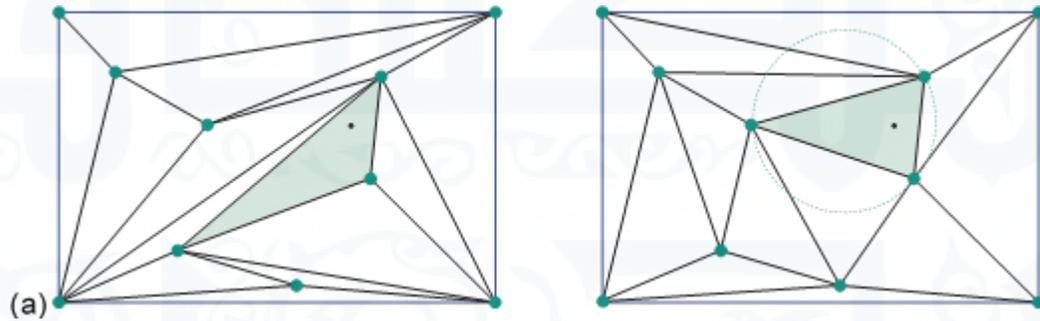
e. As an example of data internal to the web-system, consider the average grade and average time spent on the first item in each lecture. This provides 170 pairs. Each of these can now be labelled in 4 ways, according to whether the student passed the status exam and/or the final exam. These results are given as points in Fig. 4. Notice how it is not at all clear from the figure whether there is a link between performance and grades on either exam⁽⁴⁾.

Since data are available both from a status exam at the beginning of the semester and a final exam, student progress can be defined as the grade improvement, i.e.the change in grade from the status exam to the final exams. Consider therefore a simple linear regression of grade improvement, on the tutor-web grade and the time used per item within the tutor-web. This regression reveals that those are indeed important variables, but relationships to performance on exams may be nontrivial. For example The student must possess experience computer, one would expect the time taken to solve a problem to be a complex combination of the student's expertise and diligence. Thus a "Good" student should be able to solve a problem quickly and get it right, but the "diligent" hard-working Learner who may not know the material very well may take longer to get the right answer. A guessing (Poor unable) student will not take long to get the wrong answer. The remaining (Unclassified) apparent non-learning students take long to get the wrong answer. This GLUP classification is derived from Fig. 4 and used below Relating On-Line Monitoring Results to Other Figure .

Monitoring Students

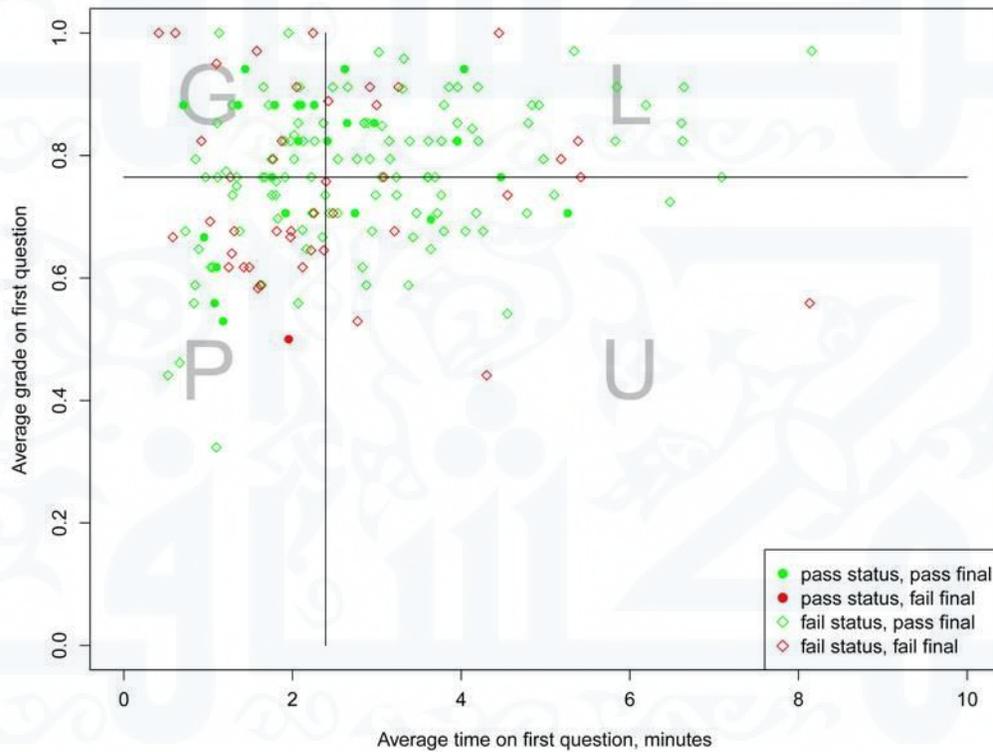
Consider next the data available to the system and how this may relate to "actual knowledge", as determined by exams, either an initial status exam or a final exam. complete data 120 students is used for these analyses for the remainder of this paper. A status exam was submitted in the second week of the course. The problems on the exam covered numbers and functions, basic gis, equation of a straight line, trigonometric, Remote sensing and quantitative side, And address numbers. The performance on the(Students who They have been subjected to daily duties frequent number of tests -1-) good exam was, with an average score of 170%. Students were also evaluated multiple times during the semester, andmonitored using the gis. In the following, summaries of the tutor-web grad e and response times along with grades from an initial status exam and the final exam are Lack of use tutor-“ the response time for Appropriate way each item is measured, along with a 38.8/61.1 -grade. The items are grouped in lectures as described in section 2, with 4. Brusilovsky. Adaptive and intelligent technologies for web-based education. Kunstliche Intelligenz, 19994 . pp 19–25 .

Figure 2



Although there is no trivial grouping seen in the figure, consider using the GLUP - classification to predict actual learning, or “improvement”, using a regular ANOVA. The “improvement” is defined as the change in grade from the status to the final exams, where the grade of both exams has been scaled to cover the interval from 0 to 100. The ANOVA was performed using the lm function in R [6]. The results are shown in Table 1⁽⁵⁾.

Figur



e3. Plot of average grade and timing for first item request within each lecture. Vertical and horizontal lines indicate classification of students according to time and grade (using medians). Color: green/red=Fail/Success on final exam. Shape: Circle/Diamond=Pass/Fail on status exa⁽³⁾.

5-Brusilovsky and C. Peylo. Adaptive and intelligent web-based educational systems. International Journal of Artificial Intelligence in Education, 2003. pp 13(2-4):159–172

Table 1

Predicting improvement (final-status) from GLUP classification. Baseline: “Poor” students who tend to guess incorrectly and quickly. Note that although the apparent “Good” students (who quickly answer correctly) show

In this linear model the Repeaters students form a baseline and the estimates for the other groups can be interpreted as gain in improvement. It is therefore seen that all the other groups perform better on average than the baseline. The differences are both statistically significant and considerable.

The main results from this analysis are that the point estimate for the poor performers is the lowest among the four groups. The greatest increase from P is amongst the learners, L, but this is not significantly different from e.g. the Good students. It is interesting to note that the unclassified group (U) shows considerably (and significantly) more improvement than the poor performers (P). The only difference in their classification is the average amount of time spent on the items. Thus, although both groups perform poorly at the outset, the individuals who spent more time on each item outperformed the others by a considerable margin in terms of improvement.

Linking to Absolute Performance

Predicting the improvement during a semester, or the “value-added” is done directly above by fitting to the improvement in grade, from the initial status exam to the final exam. For several reasons it is also of interest to consider predictions of the final exam grade (finalG) directly, including the status exam as a regular explanatory variable (statusG). Many variables can in principle be defined and used. Here the average grades from different stages within the tutor-web are included (g1, g5 and gn, gn being the average grade on the last item requested in each lecture), as is the average time spent per item at different points (T1, T5 and Tn), the squared time spent per item (T1.2, T5.2 and Tn.2), an indicator variable of whether students spend more or less time on the last (usually most difficult) item compared with the first one (Tn>T1), the GLUP class variable (class1), number of items requested (twnatt1) and finally the squared number of items requested (twnatt12). The model was fitted using the lm function and reduced using the step function in R⁽⁶⁾. The results are shown in Table 2.

Table 2

Final model selected using the AIC as a stepwise selection criterion.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-46.7506	11.0469	-4.23	0.0000
twnatt1	2.4488	0.7809	3.14	0.0020
statusG	0.5211	0.0609	8.55	0.0000
g5	54.3603	10.1337	5.36	0.0000
T5	6.0022	3.6711	1.63	0.1039
Tn	2.9232	2.0771	1.41	0.1611
‘Tn > T1’TRUE	10.3281	4.2538	2.43	0.0162
twnatt12	-0.0462	0.0182	-2.54	0.0119
T5.2	-1.0496	0.6013	-1.75	0.0826

Researcher of work based on the Central Bureau of Statistics data

Of the variables selected here, one has a slightly different status from the others: statusG is defined on data outside the tutor-web whereas other variables are defined completely with the on-line learning system.

As can be seen in the table, the GLUP class variable is not included, considered with the grade and time at different stages, which is not surprising since the classification is defined by those variables. It should also be

noted that the squared number of attempts is significant, implying that there tends to be a reduction in grade for

6- . Ismail. The design of an e-learning system:: Beyond the hype. The internet and higher education, 2001. 4(3-4):329–336

students who give more than 240 answers on average (per lecture). Earlier attempts at quantification of the effect of the number of attempt have given mixed output. For example, one might surmise that the number of attempts is like the time spent per item, i.e. be a measure of diligence, but there are also guessers and in fact the analyses

in showed a net negative linear relationship with the number of attempts. The greater number of students in the present study may be the reason why it appears to be possible to accommodate both effects using a quadratic response curve.

Note also how the (linear) effect of the time spent per item is positive (both T_5 and T_n), i.e. the longer the student spends on an item the higher the final grade. As above, this is a measure of the effect of “diligence” but one must also note that the squared time spent on the 5th item was selected in this model, implying that the estimated response curve has a maximum. The point estimate corresponds to a reduced performance for students who use on average more than T_5 3 minutes on the fifth item.

Finally, the positive coefficient on T_n implies (conditionally on the other variables in the model) that those students who on average spend longer on the last item compared to the first one receive on average a 10.3% higher grade on the final exam (but note the large standard error). If all items had the same difficulty this would be counterintuitive, but here the difficulty goes up as the students’ progress and their grades increase.

Conclusions

It is clear from a number of student surveys, that students from Iceland to Kenya like an on-line drilling system, they feel they learn from it and, based on the results given here, one can statistically demonstrate this learning.

It is seen in the above results that web-assisted education can be used to enhance student learning, but this is already fairly well established. In addition, the system contains internal information on student groupings, and this is seen to including indications of whether and how much students are likely to improve their knowledge during the semester. It also appears to be possible to indicate when students have requested too many items or are too quick at answering (implying e.g. guessing or lack of attention given to detail). As this is the first time such quadratic responses have been estimated, more research is needed to fully understand the implications and statistical power of such studies.

The analysis of response times gives the intriguing result that what would seem an obvious classification of good students does not yield the students who show the greatest gains or highest results on a final exam. Although a formal experiment is needed to extract more detail, it is likely that there is confounding within the data obtained from such measurements: (a) What seems to be a “good” student in an elementary classification will also include a number of lucky guessers. (b) More difficult is the distinction between concepts actually being measured, i.e. a quick student may well be a good student showing expertise, but a student taking long on each item may simply be diligent (i.e. not slow). The quadratic response obtained would seem to illustrate this point, i.e. greatest improvements are seen for the students who spend an intermediate amount of time on each item (correcting for other variables). Future experiments designed to shed more light on this are discussed below.

Research reported elsewhere⁽⁴⁾ implies that student learning is almost the same, regardless of whether an on-line system or traditional homework is used. As in-class surveys consistently indicate that students prefer to also get graded homework, it is not possible to replace all homework by computerized drills, but one can easily replace half the homework by on-line multiple-choice questions.

Since the instructor can make the drills form a part of the final grade and can set minimum return requirements as criterion for passing, this gives considerable potential for changes in emphases or reductions in instructor workload. Discussion: Avenues of Research

For an actual real-world course, formal requirements are set by the instructors, not the system. Applications of the tutor-web system have therefore varied in student requirements. The above results imply, however, that it may be beneficial to incorporate features which drive the students towards certain behavior or performance.

In the course studied here, as well as in other courses where this system has been tested [7] students tend to work towards a fairly high grade (median 0.94 and median of last 8 is 0.92 in the present course). Hence changes to either the item allocation algorithm or the grading scheme will likely lead to a change in behavior where the students still work towards a goal of a high grade, assuming it is still a feasible goal. Similarly, a timeout option is also likely to lead to changes in student behavior. A generic positive system change has benefits over an instructor-defined criterion since it will affect all students at all times, not just the course in question.

The students appear to gain (in terms of exam grade) through requesting more items (up to 27) than normally required (8 for this course) or normally taken (median=15, upper 75% quartile=20). It would therefore seem reasonable to encourage an increase in the number of items requested by students.

The current “last 8” internal tutor-web grade assumes incorrect answers until at least 8 questions have been answered in a given lecture. Most students therefore answer at least 8 questions in each lecture. This scheme, however, implies that if the 8th answer is incorrect after a run of 7 answers, the grade will not increase unless a new run of 8 correct answers is obtained. Many students stop at this stage and this behavior is contrary to the goal of positive reinforcement. A simple change would be to use the most recent 30 answers, or, more generally, to use for grading the most recent(3) $n_g \max(8 \min(n, 30))$

answers, possibly tapered, where n is the total number of answers given. This will penalise the guesser by introducing a longer tail and simultaneously give reduced weight to the accidental 8th incorrect response. A next-generation mobile-web version of the tutor-web will evaluate multiple grading schemes, including these. This will facilitate a simple experiment to investigate the relationship between the grading scheme and the number of attempts per lecture.

Although the tutor-web is a significant predictor of the final grade, it is not a very good one. For example, of the 113 students who obtain a grade of over 90% on the tutor-web work, 34% do not attain a grade of 50% on the final exam. The main problem with this is that the tutor-web grade is not a reliable indicator for the students themselves. The students with full marks, 100% on the tutor-web, have an 83% chance of passing the exam however. From this it is seen that the tutor-web grade is “too high” in the sense that it indicates more knowledge than is estimated using traditional exams. Future work therefore needs to investigate whether changes in the grading scheme, to the effect of lowering most grades, can provide better indicators of exam performance. The extended tail described above could be one aspect of this(7).

Another way of “reducing the tutor-web grade” is to include timeout features. Such a timeout could be a function of grade, i.e. a student can only get into a certain grade range by answering questions correctly within certain time limits.

A different reason for considering a timeout option is the general worry that many students of calculus appear not to have elementary algebra at their fingertips. Thus there is a need to investigate whether “expertise” is a concept which can be developed using the tutor-web system by enforcing some sort of time limit on such elementary issues.

7- Piccoli, R. Ahmad, and B. Ives. Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic it skills training. *Mis Quarterly*, pages, 2001.pp401–426.

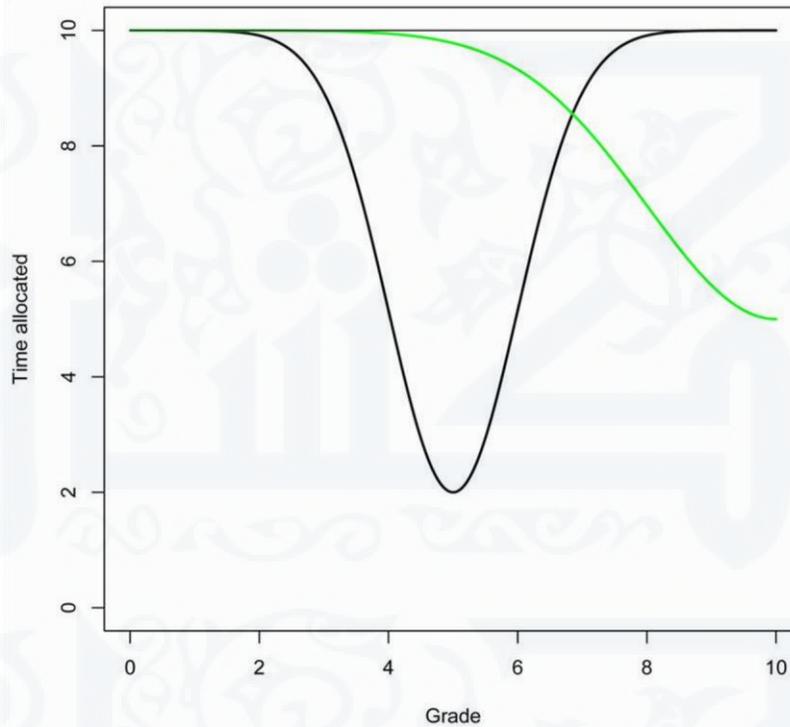


Figure 4 Possible curves to define time allocated to items, as a function of grade. Top solid line: Fixed timeout. Central inverse dome: Timeout set to enforce a threshold of expertise before continuing to higher grade and more difficult items. Green curve: Timeout set to ensure that a high grade is only achieved if the most difficult items are completed quickly.

This will almost certainly keep students working longer within grade intervals with a timeout and this could be used e.g. to ensure expertise within easier items before continuing. With the exception of the very best students, this approach should also increase the number of attempts needed, since this will make simply it harder to obtain a higher grade.

To quantify the effect of the timeout, a future experiment could focus on a single parameter in a formula such as

Figure

$$\hat{\beta}_1 = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sum(x_i - \bar{x})^2} \text{ and } \hat{\beta}_0 = \bar{y} - \hat{\beta}_1 \bar{x}$$

where \bar{x} is the mean (average) of the x values and \bar{y} is the mean of the y values.

which will give upside-down bell-curve with an upper bound of $t = a$ and a minimum of $t = b$. Given that the median time in the course discussed here is about 2 minutes, one could take e.g. $b = 2$ as initial values (central inverted dome in Fig. 5) and set up a formal experimental design by selecting either b or g at random from within some and can be classified as variables in multiple

ways and these ratings have its benefits in various research, especially when data collection 0 we will use several classifications of variable but from two perspectives essential to the two great importance in scientific research, namely: level measurement, and research design 0 The following table shows the types of variables and characteristics of each type

2.1.2

Characteristics	Variable type	The basis of classification	
Variable we measure using a measurement of the level of distance means, therefore, is sometimes called variable size, accounting for differences variables in the class values on the connected and one is connected to the variable is made up of whole numbers and fractions 0 exemplified intelligence concern, collection 00 is characterized by that there are no gaps between the variable values	Continuous	Quantitative	Level measurement
	Variable nominal level, so the place names and function of the core of this variable sections replace the classification concept into categories, such as gender, college, region, method of teaching, the profession 0 and numbers in this variable does not reflect the amounts of properties 0 The difference here is not in degree but in kind		Qualitative
Value that is not connected, so they can not use fractions in this variable, but that all values are correct, such as the number of family members 0	Discrete	Independent	In experimental and quasi-experimental research is experimental variable that addressed researcher to see its effect on the dependent variable, the variable rank (categorically) often
Moderator That is the variable that could change in the impact of the independent variable in the variable is the independent variable and the secondary is under the control of the researcher for example, when the researcher believes that the impact of teaching method based on race, sex learner variable rate or an independent variable Secondary		Dependent	Is the variable that shows the impact of the independent variable, which is often connected to a variable
		Controlled	That is the variable that the researcher is trying to cancel its effect on the experiment, and is located under his control 0
		Extraneous –Intervening Projector or intruder Extraneous -Intervening	It is that the independent variable is intended, which is not included in the study design, is not subject to the control of the researcher, but it affects the results of the study, or affect the dependent variable 0 and can not be seen or measured and puts the researcher in mind when discussing the results and interpretation 0

the source : D: \ Statistics and Educational Measurement and Evaluation of confidence is very important. Mht

intervals for each student within each lecture. Performance can be evaluated statistically either by how the number of attempts within a lecture changes as a function of b or by how the performance on an algebra item in an exam varies as a function of b . This particular choice of parameter values enforces a bottleneck where the students have to obtain a certain level of expertise before getting above a certain grade, upon which the timeout parameter is no longer limiting.

Given the complex relationship described in this paper, between time spent on each item and subsequent performance, it is not trivial to predict the full effect of any timeout parameter settings. Other issues also come into account, such as how item difficulty is assessed and why an item is difficult.

For example, one might consider a different approach, using a higher s' to set a similar limit access to the higher grades (green curve in Fig. 5). This may backfire since the most difficult items will often simply take longer and thus not be doable within a short time implied by the timeout option. Further, item difficulty in the present system is simply assessed based on the proportion of incorrect answers. If the inverse bell has a minimum at an intermediate value for the grade (where medium-difficulty items are answered), one would predict that items which can not be answered within the minimum time will (eventually) be ranked more difficult and moved to a difficulty level where the timeout does not apply. However if the minimum is at the highest grade (and most difficult items), then these items stay in place and can not be answered correctly by anyone.

Finally, since the Poor students (in the GLUP classification) are the poorest performers by all measures, one needs to consider methods to move these students into the otherwise Unclassified group, who spend more time on each item. When students have answered a question the system provides a detailed explanation of how the answer is obtained (most items have such explanations). A possible method to slow these students down is therefore to use pop-ups, such as a warning when a student has answered incorrectly and clearly asks for the next item without first reading the explanation. The net effect of this can easily be tested by randomly assigning such stop-signs to half the P-students and evaluating whether there is a statistical difference in how they move out of the P group. Acknowledgements

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The tutor-web project has also been supported by the University of Iceland, the United Nations University, the Marine Research Institute in Reykjavik, Iceland and the Ministry of Education in Iceland. Numerous authors have contributed educational material to the system. The system is based on Plone⁽¹⁾ and educational material is mainly written in $L_A^T X_E$. Examples and plots are mostly driven by R [6]. The Plone version of the tutor-web used here was implemented by Audbjorg Jakobsdottir, but many computer programmers have contributed pieces of code during the lifetime of the project.

The calculus material content used as a basis for this research has been developed by several faculty and students at the University of Iceland.

This paper is based on analyses first presented at JSM 2013 and earlier drafts have been available through arxiv.

The University of Iceland Research Ethics Committee has been informed of the study. In accordance with the Code of Research Ethics of the University of Iceland (in Icelandic: <http://bit.ly/1f1jajK>)⁽⁸⁾, article 2.4.4, informed consent is not required for studies of this type.

Among researchers of STI policies, there are basically two approaches to define research priorities in the public sector. In the traditional approach, priorities are defined by the

1 - <http://www.plone.org>

organizations that manage the funds, and then Table 2.1 Typologies of innovation policies

Category Examples of policy.
Foster the emergence of an innovation-friendly Environment and innovation

Support the formation of human resources in science, technology, Environment and innovation
Reduce key market failures, such as financing of research⁽¹⁾.

Maintain macroeconomic and social stability

Foster the emergence of a culture of innovation

Diffuse best practices in innovation management

Update the curricula of public educational institutions

Promote a change of mentality and culture in public research institutions

Foster the spread of innovations

Help strengthen private firms' absorptive capabilities, for example, with consulting services, extension activities, technological interchanges, and seminars and workshops in marketing and administration⁽²⁾.

Improve interactions between public research institutes and firms, especially small and mid-sized ones

Use the state's purchasing power to create markets for new products

Foster the emergence of bridging institutions to facilitate interaction between productive and social agents and researchers.

Encourage the emergence of innovation networks.

Act as catalyst, bringing together potential partners Diffuse information about commercial and technological opportunities.

Support researcher mobility between public research institutes and private companies .

Strengthen research and development capabilities⁽³⁾

Increase investments in research

Promote adjustments in public research institutions, especially in incentives and quality standards Promote public-private alliances for research and development Promote international scientific and technological interchanges Promote labor mobility of scientists and technologists Respond to globalization.

Promote networks of nationally competitive firms Promote international alliances among companies Strengthen the research system, ensuring it is permanently updated and is inserted into international knowledge networks

Improve the design and implementation of policies Strengthen the analytic capacity in the public sector, Improve communication between the public sector and the rest of society Ensure that users of policies participate in policymaking process Source: Elaboration based on Arnold et al⁽⁴⁾.

a system of competitive funds is used to distribute the available resources according to agreed priorities (Alston, Norton, and Pardey 1995; Echeverría and Elliot 2002). In spite of the stated objective of guiding the actions of public research institutions, the experience of

1 - Abdul Razak Mohammed Bathristi, methods of geographical research, Baghdad University Press,1988,pp(23-24).

2 - HARLAN J. ONSRUD, And others, Licensing Geographic Data and Services.2004,usa , National Academies Press online,pp(34-45).

3 - Javier M. Ekboir, Gabriela Dutrénit, Griselda Martínez V., Successful Organizational Learning in the Management of Agricultural Research and Innovation,usa,2009,pp(29-33)

4 - by Pat Sikes, Jon Nixon and Wilfred Carr, THE MORAL FOUNDATIONS OF EDUCATIONAL RESEARCH Knowledge, Inquiry and Values. Open University Press, Maidenhead · Philadelphia, usa, 2003, pp.

developing countries shows that these mechanisms have not functioned as expected (Gill and Carney 1999; Vera-Cruz et al. 2008). It is worth pointing out that most developed countries and advanced research centers— as well as companies with strong research programs—lack centralized and rigid mechanisms for priority setting. In a survey of 95 research universities in the United States, Welker and Cox (2006) found that 65 percent of researchers thought that their institutions established overall institutional priorities, but only 35 percent thought that their institutions defined research priorities. Moreover, they agreed only weakly that research priorities were known by faculty.

The strength of these research systems is not based on a clear definition of priorities but rather on the quality of the researchers, a diversified research system (that is, a system with multiple capabilities that can be tapped for specific research needs), and strong interactions with the users of the technologies 9 .

The traditional approach for defining research priorities has been criticized because the rigid definition of priorities at a national level may leave out research opportunities that do not have a national scope or are not sufficiently well understood by those who manage the prioritization process (because the processes

they are expected to influence are very complex or the main trends have not sufficiently consolidated) (In the terminology of complex systems (see Section 2.1.2), the traditional approach would be classified as rational design. As seen below, the alternative approach is based on the management of variety and selection. In recent decades, several developing countries have established research-prioritizing mechanisms through the identification of user demands The experience of the past two decades has shown that these mechanisms have not solved the problems affecting research systems. The reason is that demand-driven mechanisms continue to be structured according to the linear vision of science and do not solve the problem of interaction between researchers and users and, additionally, do not influence research quality⁽¹⁾.

The second approach, based on complexity theories (see Section 2.1.2), is based on the premise that the definition of research priorities

(a complex process) requires more flexible mechanisms than just demand-identification. These mechanisms should recognize the complexity of the systems they seek to influence and the capabilities of all actors in the innovation system. The process of prioritizing research, then, is organized as an exploration to balance the exploitation of existing knowledge and capabilities and the exploration of new opportunities (Branscom 1999; Christensen and Raynor 2003; Davila, Epstein, and Shelton 2006). A successful example of opportunity exploitation is the⁽²⁾.

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- 1 - 1- ecoserv-gis@outlook.com
 - 2- in Icelandic: <http://bit.ly/1f1jajK>