

Design and application of an activity to integrate knowledge and self-assessment of methodological skills

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Abstract

As part of the adaptation of the «Psychological research methods, design and techniques» subject to the European Higher Education Area, an activity to promote integration in the process of acquiring methodological skills and their self-assessment was proposed. A «Significant Learning Activity based on Centres of Interest» was designed based on a subject well-known to the student. One of the centres of interest used was «the lack of discipline among students in the classroom» which in this context, is a teaching resource instead of a problem. The results show the suitability of the activity for the introduction of the subject and facilitating self-assessment. They also show a positive relationship between the level of completion of the activity and marks in the examination. They also provide evidence of the activity's «sustainability,» in the sense of its feasibility in large groups and the fact that it involves only a slight increase in the workload of the teaching monitor and teacher.

General area of interest of this innovation

Changes to methodology and approach to curriculum. New teaching methodologies inspired by centres of interest. The proposed activity is of special interest for subjects with a methodological basis with a high number of students, regardless of the qualification.

1. Objectives

As part of the requirements for adaptation to the European Higher Education Area, the purpose of this project was to promote the acquisition and assessment of trans-

versal skills (those involving significant integration of knowledge and production of critical judgements, arguing and justifying the explanation) and specific skills in the subject «Research methods, designs and techniques in Psychology» (MeDiTi), by means of designing a teaching-learning activity aimed at achieving the following objectives:

1. Facilitating the integration of the methodological skills acquired by the student before coming to University by means of designing an initial contact with the subject that is appealing and sensitive to this prior knowledge.
2. Assessment of the students' starting point in terms of the practical application of methodological concepts, and integration of this information in teaching practice on the course and tutoring tasks in particular.
3. Self-assessment of the student's progress in learning of the subject.

2. Description of the project

2.1. Starting point and diagnosis

The subjects linked to the MeDiTi core subject have an essentially methodological nature which means that they are taken at the beginning of the respective degree courses—usually during the first year and often during the first semester. This situation, which will very probably continue in future Psychology degrees adapted to the European Higher Education Space, raises interesting challenges.

The majority of those in the group we deal with has no knowledge of substantial areas of psychological contents and also has no prior knowledge of research methods, design and techniques. We also know that most students who are new to the Faculty of Psychology have expectations that differ from the skills covered in this subject. Furthermore, «methodology» is often seen as a course that is less appealing than the other subjects that are taken at the same time.

These are challenges rather than problems because we feel that it is necessary to confront this situation. We are convinced that the acquisition of basic methodological skills by first year degree course students is vital for the appropriate transfer of these skills to the other subjects in the Psychology study plan. We also feel that the less attractive the content of a course is, the more important it is to have activities that encourage the students' interest from the very first day, and to increase their sensitivity towards progress in learning. These convictions were the basis for a teaching product that we call a «Significant Learning Activity based on Centres of Interest» (SLACI).

2.2. Design of the activity

The design of the activity consisted of the following elements:

2.2.1. Selection of a subject well-known to the student

Based on the choice of a subject well-known to and of interest to the student, the aim is to create a teaching situation that increases the students' motivation for learning contents that have traditionally been explained by examples that are difficult for students to relate to. The aim is for subjects related with MeDiTI to begin with centres of interest that facilitate the student's acquisition and self-assessment of methodological skills based on their prior knowledge and a subject well-known to them, so that they become familiar with the process of giving consistency and meaning to the new concepts that appear on the syllabus.

The key feature in the proposal of innovation is the choice of this centre of interest, which could vary according to the context, situation, environment, etc. The aim is therefore for the student to undertake significant learning based on the constructivist perspective (Coll and Solé, 1989 and Gómez and Coll, 1994), which considers that learning in the long term is acquired by construction, and that humans connect some concepts with others, like a puzzle in which pieces fit together (Ballester, 1999). This means that learning must take place in significant contexts in order to promote the relationship of new knowledge with the conceptions and experience prior to that to be learned (Villa and Poblete, 2007).

After comparing various subjects and analysing their advantages and limitations, «disturbing behaviour by students in the classroom» was selected. As explained in a previous study (Portell, Boixadós and Sotoca, 2005; Portell and Boixadós, 2006), among the advantages of this subject is the fact that the student has information, experience and opinions on this behaviour. To a certain extent, the selection of this subject brings key elements of the reflection that Wagensberg (1999) entitled «The scientific method as an idea for coexistence» into the teaching sphere. Scientific methodology, as a means to learn from experience effectively, can therefore establish interesting synergies with the process of acquisition of basic personal skills in the new framework proposed by the European Higher Education Space.

2.2.2. Production of a script or form

The questions considered in this form must lead the student to bring to bear the following conceptual blocs of the subject: «variables, definitions and operating definitions», «data collection methods and techniques», «theories and hypotheses», «relation, causality and control», «population and sampling», «validity and reliability». A final bloc examines the difficulty of the activity itself. Table 1 includes the specific questions related to «disturbing behaviour by students in the classroom».

2.2.3. Production of the «prototype answer»

The «prototype answer» was designed based on analysis of the answers to the questions in Table 1. We use this label to designate the material produced using the correct answers and illustrative errors from the answers by the group/class. This material is used

Table 1. Initial form and methodological blocs. Application to the centre of interest: «disturbing behaviour by students in the classroom».

Question	Methodological bloc
1. Build a list of disturbing behaviour by students in the classroom.	Variables and operating definitions.
2. What would you do to find out how many of the behaviour patterns you mentioned in the previous question are seen in this group/class during the course?	Data collection methods, designs and techniques.
3. Choose one of the behaviour patterns mentioned in question 1. Suggest an explanation for this behaviour.	Theory and hypothesis. Relation and causality. Control
4. What would you do to find out if the explanation you proposed in the previous question is correct?	Population and sample. Validity, reliability.
5. State the doubts you had when answering the questions above. If you had no doubts, say which of the subjects you have studied so far have been most useful in answering these questions.	

to introduce concepts during the semester and to provide complementary information to the self-assessment of the initial answers of each student.

3. Methodology

After the centre of interest for which all the students have information and experience has been determined, the application of the activity is organised in three phases as shown in Figure 1.

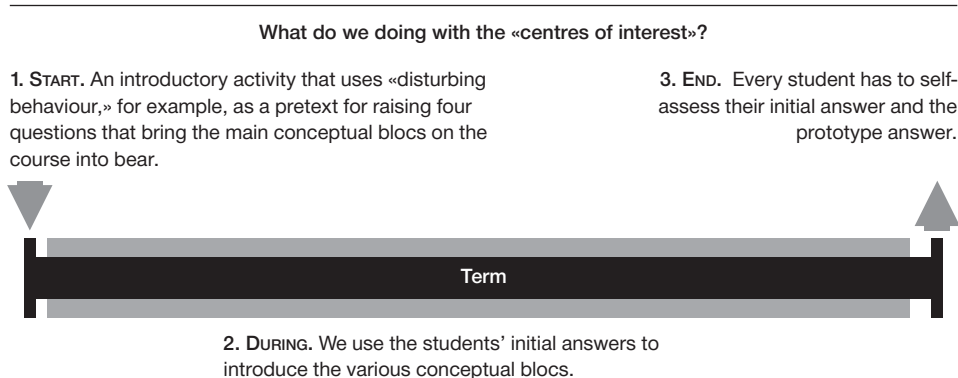
1. *Stage 1: Start of the course.* Application of the activity to «class 0» for presentation of the course and digitalised gathering of the written information; qualitative analysis of the information from the initial phase and production of the «prototype answer».
2. *Stage 2: During the course.* Use of the «prototype answer» as a resource for introducing concepts during the semester.
3. *Stage 3: End of the course.* The initial work is sent to every student with a request for quantitative and qualitative self-assessment of their answers according to the knowledge acquired on the course; sending of a «prototype answer» with the request for them to review it and grade their progress; assessment of the return.

4. Results

This activity has been applied and assessed in various courses and learning environments, both in both virtual and presence learning. The results presented in the most detail are those of the initial assessment of the experience with Psychology students at the UAB and in a classroom learning environment. They were also widely used and assessed in the UAB

Psychopedagogy course (Vives, Portell, Boixadós, 2007). The SLACI has also been adapted to other centres of interest for a virtual teaching-learning environment in the project carried out by the Psychology studies at the Open University of Catalonia (Boixadós, Portell, Redolar and Vives, 2007). In the latter case, the centre of interest was «the forum of the virtual classroom and the elements that affect the learning process in this space», based on the fact that all the students at the Open University of Catalonia know the classroom forum as a space to which the consultant tutor and the group of students have access.

Figure 1. Schedule of the activity

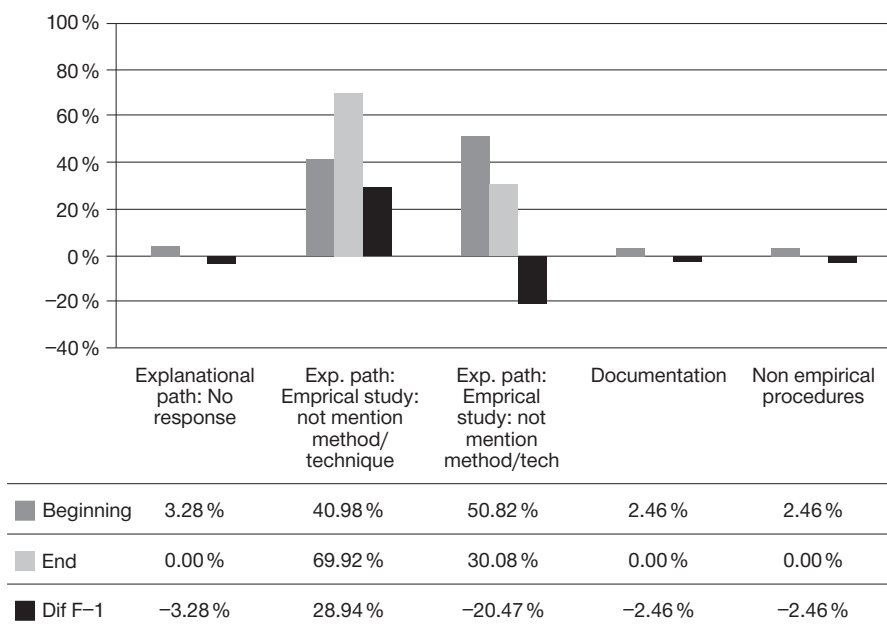


In the initial application of the activity based around the «disturbing behaviour by the student in the classroom» centre of interest, the assessment process is carried out using a multi-method approach that combines quantitative data from the result and qualitative data from the process.

Of the total number of students registered on the Research Methods course for the UAB Psychology Degree 2005-06 (452 students), 72 % participated in the activity (325 students), and 28 % of these completed it (beginning, end and prototype answer).

1. An initial level of assessment: this is based on analysis of the evidence of learning from the activity. The responses to the initial and final open questions were produced qualitatively by means of a content analysis using Atlas.ti 4.2 (Muñoz Justicia, 2005). This process led to various systems of categories being produced. Interesting results are obtained about the evolution of the group-class by comparing the application of these categories to the initial data and the final self-correction. By way of an example, Figure 2 summarises the categorisation and comparison of the responses to Question 4 in Table 1. It shows how the percentage of students basing their explanation on strategies other than the logic of scientific research falls.

Figure 2. Analysis of the contents of final self-correction in the activity and comparison with the initial answer to question 4



2. A second level of assessment provides a comparison of the quantitative self-assessment by the students of their execution. It can be seen that the average self-assessment in the initial activity is 4.8 points ($SD = 1.3$; $Md = 5$) while the average self-assessment of the final activity is 7 ($SD = 1.1$; $Md = 7$) and this difference is statistically significant ($t = 17.8$, $gl = 124$; $p < 0.001$). The boxplot shows the distribution of these two self-assessments (Figure 3). In categorical terms, when the students finish the course they feel that they have progressed from a fail grade to an excellent.
3. A third level of assessment is based on studying the relationship between completion of the activity and the result in the final examination of the course. Among the students completing the activity, there was a statistically significant reduction in the proportion who did not sit the final examination ($X^2 = 40.67$; $gl = 1$; $p < 0.001$). When we analyse the relationship between the grade in the final examination and extent to which the activity had been completed in the sub-sample of 380 students that sat the examination, a statistically significant relationship is obtained ($F = 16.2$, $gl_1 = 2$, $gl_2 = 377$, $p < 0.001$). The trend observed was as expected: the average grade of the group who did the entire activity is higher, followed by the average of the group who did part of it (Figure 4).

Figure 3. Self-assessment by the student

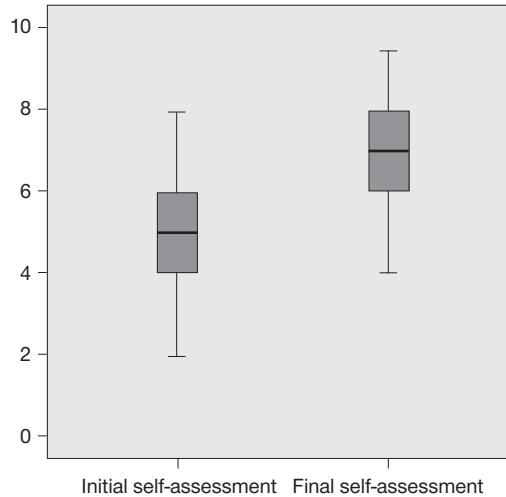
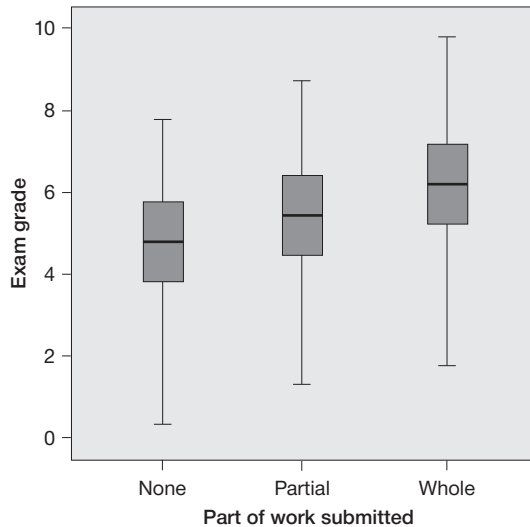


Figure 4. Relationship between the level of completion of the activity and the grade in the final with examination

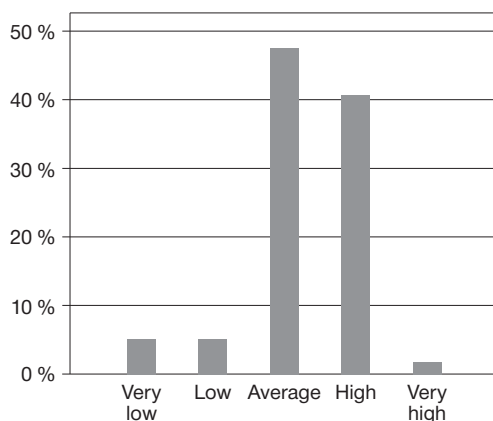


4. A fourth assessment level for the activity was based on the response to an opinion questionnaire. Among other aspects, the assessment survey for the activity provides information on the time spent on the activity. 70 % of the sample completed the self-assessment exercise within 30 minutes and only 10% needed more than one hour. As regards the overall assessment of the student of this learning strategy, the majority felt it was of medium/high usefulness (Figure 5).

5. Conclusions

1. The activity enabled the objectives set to be attained. The assessment performed shows that this activity is appropriate for promoting self-assessment of the methodological skills acquisition process among first year Psychology students. Although the data is not shown here, the references to their dissemination in other areas can be consulted.
2. The relationship observed between completion of the activity and the grade in the final examination is an indicator which leads to positive assessment of the contribution made by the SLACI to the specific MeDiTi skills.
3. The activity promotes transversal skills of significant knowledge integration and the making of critical judgements while arguing and justifying the explanation.

Figure 5. Overall assessment of the activity



4. This learning strategy can easily be applied to numerous groups without an excessive increase in the workload of the teaching staff or the students.
5. The two centres of interest mentioned above —«disturbing behaviour» and «the forum of the virtual classroom and the elements that affect the learning process in this space»— are by no means the only possibilities for application of the general structure of the activity. Here are some other centres of interest that could be adapted: courtesy on campus; the Psychology students' expectations of what Psychology is; the use of contraception by young people; use of Messenger; or young peoples' preference for designer-label clothing.
6. Finally, we would like to conclude by mentioning a phrase that we particularly like: «learning is not obvious». We believe that in methodology-based subjects,

which are usually unappealing to students when they have to study them, it is necessary to provide resources that contribute to making the learning process clear and relevant. We also feel that these resources must be carefully evaluated and must require a «sustainable» workload from both the teaching staff and the teaching monitor. We believe that the proposal made in this project meets these two requirements and can be used in other subjects that introduce the methodology of research.

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Research methods; Self-assessment of skills; Significant learning.

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Presentation of the working group

The group has extensive experience in MeDiTI teaching and has produced the joint publication «Research methods: teaching resources». The group has had experience in teaching innovation projects since 1997, when Mariona Portell began the Faculty of Psychology Reception Plan. Mercè Boixadós has participated in pilot studies by ANECA (the National Agency for Quality Assessment and Accreditation) and AQU (the University Quality Assurance Agency) on European convergence and is responsible for the adaptation of the Psychology course to the European Higher Education Space. Jaume Vives has extensive experience in the use of computer techniques applied to teaching and research in Psychology.

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