

Teachers and Students Involvement in Research and Innovations through Research Projects

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Abstract:

Every day, teachers engage in research. Working with students to facilitate learning, teachers develop lesson plans, evaluate student work, and share outcomes with students, parents, and administrators. Teachers, then begin again with new units and lessons to clarify and review concepts as well as develop new understanding. That may not sound much like research — most of us call it teaching! But if we describe those activities in slightly different language, we'd say that on a daily basis teachers *design and implement a plan of action, observe and analyze outcomes, and modify plans to better meet the needs of students.* That's research.

All that distinguishes teacher research from the everyday work of teaching is that teacher research consists of *intentional and systematic inquiry in order to improve classroom practice* — intentional because the teacher chooses to pursue a particular question; systematic because she follows the steps described below. In teacher research, the teacher chooses a question she wants to know more about (the *research question*), plans how to gather useful information (*data collection*), reflects on what she's learned (*data analysis*), and determines how content or instruction can be modified to better serve student needs (*conclusions* or *outcomes*). Teacher research is simply good teaching that is planned and written down in a formal way.

Keywords –*Research, Teachers, Innovation, Students*

I. Introduction

One of the biggest challenges for both faculty and students in the ever-competitive world of research is how to get the job done. Students need the opportunity to learn and grow, as well as to increase their chances of attending graduate school; faculty members need to pursue their discipline and feed their teaching. Since students often do not understand the urgency of their need, the burden of this endeavor is left to the faculty. After all, the faculty person is the one with the upper hand in terms of social power, and the student is therefore

likely to be apprehensive, at best, in the pursuit of research. *But, how does the faculty member go about involving the student?* This article presents several suggestions as to how this can happen as painlessly as possible for all. The ideas here are not just for the faculty member, but also provide some insight for students as to how the system works and how to facilitate their own interests.

The vehicles for the inclusion of students in research follow two primary roads: a **programmatic approach, and an informal one.**

The programmatic approach includes the use of the classroom to spark interest in research. The classroom is perhaps the college professor's most valuable tool for conveying the passion that often goes with the pursuit of research. It is here the student first sees our enthusiasm and excitement over "doing science." Although important and traditional, the classroom is not the only conventional vehicle for involving the student in our research. Other areas that spring from the classroom include in-class projects and/or lab reports that require the collection of some small amounts of data, but nonetheless help to answer a real research question. These paths are often best used to illustrate the mechanics of the research process and can be used to springboard to a research question proposed by the faculty or student. The last programmatic approach mentioned involves a teaching tool that has become quite popular in recent years within the field of psychology--service learning. Here the student does some service to the community that directly relates to the content area of the course he or she is taking. Often the "hands-on" nature of this course component can spark questions from the students which the faculty can then use to

draw the student into a line of research related to that interest.

The informal approach mentioned takes a different track. Here the faculty must display personal interest in the student. Sometimes this can be accomplished by informal meetings after class which begin as simply a question of clarification about a point in the lecture just given, and grow into an invitation to answer the question by attending a meeting in the lab of the professor. Let's face it, to approach a faculty member about becoming part of a research group is considered a daunting task by the undergraduate. Although we faculty would like to believe it is so, students are not necessarily going to be drawn to the glow of our intellects like moths to a flame, no matter how brightly we may radiate.

As was said before, the social power has advantage here, and we can use that social dynamic to benefit our students and ourselves. Just saying, "Stop by and visit" may not be enough for some students. We increase the probability of high interest and motivation if we make the first move, or make it easy for the student to make it. In connection with this latter point, guest speakers in a class can also pave the way for students and faculty to approach one another about the answer to a research question. These speakers can be other students who are currently involved in the faculty's research and are presenting data or reporting on a field experience. The power of a role modeling effect by these student speakers as well as outside guests should not be underestimated.

Sometimes the beginning of a research project is the most exciting time for researchers, and student interest may wane as the rather slow wheels of research grind on. It needs to be pointed out, however, that there are multiple reinforcers for students and faculty in this process. These include some straight-forward benefits such as student access to resources and faculty. But less immediately tangible reinforcers also exist. Students, as was stated earlier, can serve as role models for other students. This benefits both students and faculty who may be trying to convince other students of the benefits and ease of the research process. Students perform this role modeling effect by presenting ongoing research in introductory psychology courses,

acting as course tutors, and by monitoring the research activities of less knowledgeable students just starting the journey into research.

Related to these role modeling functions, and as an added benefit, students also get to present their research at regional and/or national conferences, either by themselves or with faculty. For faculty at small colleges with a demanding teaching load these relationships also provide a vehicle for adding to their own vitae, as well as providing to students the opportunity to add to their own beginning resumes.

II. Objectives:

1. **To involve teachers in Pure Research based activities:**
2. **To encourage Students to participate in research projects minor or major:**

III .Hypothesis:

This research paper is purely based on the hypothesis that if the research work is taken up seriously by the Teachers through their interest and innovative practices by giving Minor and Major Projects to the students, it will definitely enhance the quality and inculcate research practices among all.

IV. Relevance of this research work:

Mission to educate, to train and to undertake research:

The core missions and values of higher education, in particular the mission to contribute to the sustainable development and improvement of society as a whole, should be preserved, reinforced and further expanded, namely, to:

(a) educate highly qualified graduates and responsible citizens able to meet the needs of all sectors of human activity, by offering relevant qualifications, including professional training, which combine high-level knowledge and skills, using courses and content continually tailored to the present and future needs of society;

(b) provide opportunities (*espace ouvert*) **for higher learning and for learning throughout life**, giving

to learners an optimal range of choice and a flexibility of entry and exit points within the system, as well as an opportunity for individual development and social mobility in order **to educate for citizenship and for active participation in society**, with a worldwide vision, for endogenous capacity-building, and for the consolidation of human rights, sustainable development, democracy and peace, in a context of justice;

(c) **advance, create and disseminate knowledge** through **research** and provide, as part of its service to the community, relevant expertise to assist societies in cultural, social and economic development, promoting and developing scientific and technological research as well as research in the social sciences, the humanities and the creative arts;

(d) Help **understand, interpret, preserve, enhance, promote and disseminate national and regional, international and historic cultures**, in a context of cultural pluralism and diversity;

(e) Help protect and enhance **societal values** by training young people in the values which form the basis of democratic citizenship and by providing critical and detached perspectives to assist in the discussion of strategic options and the reinforcement of humanistic perspectives;

(f) Contribute to the development and improvement of education at all levels, including through the training of teachers.

V.METHODOLOGY:

This is a descriptive research. Secondary data has been used for this research paper.

Data of this paper is drawn from the following **secondary sources**, like articles in the newspapers and magazines, journals, and websites.

VI. Research in education serves a number of purposes, including:

- Gathering evidence from research at the classroom, school and school board level to inform a variety of management and governance decisions;

- Providing focus for educational change and policy development related to student engagement and learning;
- Providing opportunities to conduct applied research to enhance teacher preparation, teacher practice and student learning outcomes;
- Encouraging and supporting the development of change leaders who are willing and able to champion innovation in education;
- Allowing teachers to participate in applied research and understand its importance in improving student learning, and
- Engaging students in research initiatives to ensure that improvement activities are focused on ensuring the system is student-centered.

VII. Why Teachers must take up research?

Teacher research differs from more formal or academic research about schools and teaching in a number of meaningful ways that make it quite valuable to teachers, administrators, and academic researchers alike.

1. by, for, and about teachers

The most obvious difference, of course, is that *teachers* conduct the research — not district administrators evaluating a teacher or curriculum, and not university faculty or graduate students who may not spend enough time in the classroom to truly understand what's happening.

In teacher research, *teachers* decide what to study. The research question emerges from a teacher's nagging or curious "*I wonder...*" about some aspect of classroom life. As a result, teacher research addresses the challenges teachers actually face — not the challenges someone else thinks they face. In addition, teachers participate in the production of knowledge and theory about classroom life. Not only the research questions but the methods and conclusions also come directly from teachers. So much is written *about* teachers and *for* teachers, but writing *by* teachers can be especially valuable — and

represents a great professional opportunity for the teacher writing it.

Finally, the findings of teacher research impact teacher practice directly because they stay in the classroom or are shared with the researcher's colleagues. Research findings are not generated to appear in a scholarly publication that takes significant time to filter back to the classroom. Findings can affect practice immediately as teachers make decisions about a strategy's effectiveness for student learning.

2. Building new relationships

Teacher research also gives teachers the opportunity to develop new and different relationships with both colleagues and students. While a lone teacher can pursue research on their own, the value and effectiveness of teacher research are magnified when several teachers at a school/college work together, forming a supportive research group to act as a sounding board, provide encouragement, and explore next steps. This opportunity for collaboration with colleagues breaks through the isolation many teachers experience. The process invites teachers to include students in decisions about curriculum in an effort to develop and incorporate best practices. After all, if you want to know how a particular strategy is affecting a child's learning and experience in college, who better to ask than the student?

Teacher research projects vary greatly, for the goal is for individual teachers to decide the important issues for investigation. You start simply by asking questions about your teaching. Projects might focus on one student, a group of students, or the entire class; they might focus on a particular instructional strategy to understand its effectiveness or on the ideas students bring with them to class.

3. The research question

A research question is designed to get to the heart of what goes on in the classroom, asking "what's going on?" in relation to behaviors or strategies. It's worth spending significant time thinking about this central component of teacher research. Using guiding questions in order to focus attention in the research process:

- What are you curious about in your classroom?
- What puzzles you in your classroom?
- What problems do you want to solve in your classroom?
- What seems most or least successful about your teaching?

It might be helpful to frame inquiry as a "What happens when...?" "How...?" or "What is...?" question.

- "What happens when..." allow teachers to explore the effects of a particular practice, strategy or intervention. "What happens when I implement read-aloud in my classroom?" invites teachers to observe the effects of read-aloud strategies from a cognitive or behavioral perspective, for example.
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- "How..." questions lead teachers to consider the details of a practice or behavior. For example, "How do ELL students interact during recess?" invites teachers to try to understand social behaviors of particular students that might suggest ways to facilitate interaction in the classroom.
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- "What is..." questions suggest thoughtful consideration of a method or strategy and its place in classroom practice. "What is the role of inquiry in my science classroom?" requires careful reflection on the role and possibilities of inquiry in the classroom, its potential for student learning, and the qualities of inquiry in the classroom.

Choosing a compelling question is critical for it guides the research process. It can be tweaked over time as teachers discover that they are really interested in thinking more broadly or narrowly about an issue, for example, but the research question needs to emerge from an area of inquiry

about which teachers are passionate, for this keen interest sustains the research process.

4. Data collection strategies

In addition to teachers' everyday opportunities to record data, a number of other strategies can be useful for collecting data in the classroom. Interviews with students, parents and other teachers can yield valuable information.

- Collect student work such as portfolios, written work, and art work.
- Record class discussions, group work, and playground or cafeteria interactions through photographs or audio or video recordings.
- Use questionnaires, checklists, and surveys to explore students' attitudes, opinions, preferences, behaviors.

When selecting data collection strategies, it is important to consider which strategies best answer the research question and which strategies fit as seamlessly as possible into daily classroom practice, although data collection is also simply characteristic of thoughtful teaching. Again, the distinguishing characteristic of teacher research is that this collection of data is intentional and systematic. Nevertheless, when selecting strategies, questions to keep in mind include the following:

- Can you afford the time to gather, record and reflect using this technique?
- How soon can the technique give you information?
- What are the limitations of this technique?

5. Data analysis

Data collection can quickly yield tremendous amounts of data for analysis, and initial analysis — as well as revision and refinement of the research question — is likely to begin before data collection ends. Data analysis is the process of organizing and reorganizing data in a variety of ways in an effort to understand what the data say. As a systematic form of inquiry, teacher researchers don't rely only on

reflection and intuition to understand classroom life (even though these are valuable tools), but they "get their hands dirty" through intensive analysis of the data

Several strategies to help teachers navigate data:

- **Categorize and sort.** Sorting data into categories is a way of identifying potential themes that will organize findings. Recording key quotes or observation details on index cards, for example, allows the teacher-researcher to "shuffle" data into different categories in an effort to understand "what's going on?"
- **Order.** Analysis can be facilitated by ordering data in various ways: chronologically, by frequency, or by importance, for example. Chronological ordering of one student's data, for example, might show development of a particular capacity over time; ordering data by frequency might yield insight into the time of day certain behaviors occur.
- **Identify and acknowledge assumptions.** Teacher research groups are an ideal setting for identifying and exploring assumptions the researcher brings to the process. Unacknowledged assumptions may leave the researcher vulnerable to seeing only what she expects to see. For example, an unacknowledged assumption that students read better in silence and isolation might leave the researcher blind to findings that suggest more interactive reading strategies are effective for some students.
- **Pay attention to surprises and unexpected results.** The identification of assumptions and possible biases leaves the teacher-researcher more receptive to surprises that may come from the data and involves paying attention to data that doesn't seem to fit with other data. Surprises can lead to new areas of inquiry or deeper understanding of the area of investigation.

- **Talk with students and others about what they think.** Students are a tremendous yet often untapped resource for understanding what's going on in the classroom. In addition to involving students in data collection, student insight can be valuable for data analysis as well, for they can confirm or disconfirm initial analyses, as well as provide alternative analysis. The research group should play the same function as researchers work to organize and focus data. In addition, talking with interested others about analysis of data is an opportunity to speak findings out loud and listen for moments that lack clarity.
- **State theories.** Data analysis should lead to the articulation of a *teacher's* theory about what is going on in the classroom. Plenty of research offers theories on the way things work in schools, but analysis frequently generalizes findings across settings so that the theories that emerge are too abstract to apply to particular classrooms. The benefit of findings that emerge from teacher research is the generation and articulation of a personal theory of how things work or how they might be changed to enhance classroom practice.

6. Writing up findings:

- Summoning time and energy to write a report of research findings might seem a poor use of valuable time, but the process of organizing and writing about one's findings is a critical step in identifying and articulating new understanding(s) about "what's going on" in the classroom. Prompts or strategies for drafting a report of findings, Writing about findings is another feature that distinguishes teacher research from ordinary classroom practice, for the write-up reflects the intentional and systematic nature of teacher research, acting to improve classroom practice. Once again, the write-up does not focus on *proving* something through research, but rather describes *new understanding* that emerges from the process.

- Writing also facilitates an exploration of the implications for classroom practice that emerge from self-study. A new practice or strategy may be embraced or rejected following the teacher research process. Writing up findings can also facilitate greater collaboration among colleagues, for a report of the research not only describes the process (the data collection and analysis, for example) but also shares insights valuable to the larger school community of educators.

VIII. Students' Research: Strategies for Motivating Students

Following are some research-based strategies for motivating students to learn.

- **Become a role model for student interest.** Deliver your presentations with energy and enthusiasm. As a display of your motivation, your passion motivates your students. Make the course personal, showing why you are interested in the material.
- **Get to know your students.** You will be able to better tailor your instruction to the students' concerns and backgrounds, and your personal interest in them will inspire their personal loyalty to you. Display a strong interest in students' learning and a faith in their abilities.
- **Use examples freely.** Many students want to be shown why a concept or technique is useful before they want to study it further. Inform students about how your course prepares students for future opportunities.
- **Use a variety of student-active teaching activities.** These activities directly engage students in the material and give them opportunities to achieve a level of mastery.
 - Teach by discovery. Students find as satisfying as reasoning through a problem and discovering the underlying principle on their own.

- Cooperative learning activities are particularly effective as they also provide positive social pressure.
- **Set realistic performance goals** and help students achieve them by encouraging them to set their own reasonable goals. Design assignments that are appropriately challenging in view of the experience and aptitude of the class.
- **Place appropriate emphasis on testing and grading.** Tests should be a means of showing what students have mastered, not what they have not. Avoid grading on the curve and give everyone the opportunity to achieve the highest standard and grades.
- **Be free with praise and constructive in criticism.** Negative comments should pertain to particular performances, not the performer. Offer nonjudgmental feedback on students' work, stress opportunities to improve, look for ways to stimulate advancement, and avoid dividing students into sheep and goats.
- **Give students as much control over their own education as possible.** Let students choose paper and project topics that interest them. Assess them in a variety of ways (tests, papers, projects, presentations, etc.) to give students more control over how they show their understanding to you. Give students options for how these assignments are weighted.

IX. Conclusion

On the eve of a new century, there is an unprecedented demand for and a great diversification in higher education, as well as an increased awareness of its vital importance for socio-cultural and economic development, and for building the future, for which the younger generations will need

to be equipped with new skills, knowledge and ideals. Higher education includes 'all types of studies, training or training for research at the post-secondary level, provided by universities or other educational establishments that are approved as institutions of higher education by the competent State authorities'.

Everywhere higher education is faced with great challenges and difficulties related to financing, equity of conditions at access into and during the course of studies, improved staff development, skills-based training, enhancement and preservation of quality in teaching, research and services, relevance of programmes, employability of graduates, establishment of efficient co-operation agreements and equitable access to the benefits of international co-operation. At the same time, higher education is being challenged by new opportunities relating to technologies that are improving the ways in which knowledge can be produced, managed, disseminated, accessed and controlled. Equitable access to these technologies should be ensured at all levels of education systems.

Higher education has given ample proof of its viability over the centuries and of its ability to change and to induce change and progress in society. Owing to the scope and pace of change, society has become increasingly **knowledge-based** so that higher learning and research now act as essential components of cultural, socio-economic and environmentally sustainable development of individuals, communities and nations. Higher education itself is confronted therefore with formidable challenges and must proceed to the most radical **change and renewal it has ever been required** to undertake, so that our society, which is currently undergoing a profound crisis of values, can transcend mere economic considerations and incorporate deeper dimensions of morality and spirituality.

The strength of teacher research is the development of a better understanding of classroom practice in ways that are specific and local. Outside researchers often work to generalize research findings to the larger educational community or lack a teacher's insider perspective on the classroom context. In its focus on intentional and systematic inquiry, teacher

research empowers teachers to thoughtfully examine and analyze classroom practices in order to improve teaching, a stage in which enrolment in higher education is low by internationally accepted comparative standards should strive to ensure a level of higher education adequate for relevant needs in the public and private sectors of society and to establish plans for diversifying and expanding access, particularly benefiting all minorities and disadvantaged groups.

The interface with general, technical and professional secondary education should be reviewed in depth, in the context of lifelong learning. Access to higher education in whatever form must remain open to those successfully completing secondary education or its equivalent or meeting entry qualifications at any age, while creating gateways to higher education, especially for older students without any formal secondary education certificates, by attaching more importance to their professional experience. However, **preparation for higher education should not be the sole or primary purpose of secondary education, which should also prepare for the world of work**, with complementary training whenever required, in order to provide knowledge, capacities and skills for a wide range of jobs. The concept of bridging programmes should be promoted to allow those entering the job market to return to studies at a later date.

Concrete steps should be taken to reduce the widening gap between industrially developed and developing countries, in particular the least developed countries, with regard to higher education and research. Concrete steps are also needed to encourage increased co-operation between countries at all levels of economic development with regard to higher education and research. Consideration should be given to making budgetary provisions for that purpose, and developing mutually beneficial agreements involving industry, national as well as international, in order to sustain co-operative activities and projects through appropriate incentives and funding in education, research and the development of high-level experts in these countries.

X. Recommendations and Suggestions:

PRIORITY ACTIONS AT NATIONAL LEVEL

1. States, including their governments, parliaments and other decision-makers, should:

- (a) Establish, where appropriate, the legislative, political and financial framework for the reform and further development of higher education, in keeping with the terms of the Universal Declaration of Human Rights, which establishes that **higher education shall be 'accessible to all on the basis of merit'**. **No discrimination can be accepted**, no one can be excluded from higher education or its study fields, degree levels and types of institutions on grounds of race, gender, language, religion, or age or because of any economic or social distinctions or physical disabilities;
- (b) Reinforce the links between higher education and research;
- (c) Consider and use higher education as a catalyst for the entire education system;
- (d) develop higher education institutions to include lifelong learning approaches, giving learners an optimal range of choice and a flexibility of entry and exit points within the system, and redefine their role accordingly, which implies the development of open and continuous access to higher learning and the need for bridging programmes and prior learning assessment and recognition;
- (e) Make efforts, when necessary, to establish close links between higher education and research institutions, taking into account the fact that education and research are two closely related elements in the establishment of knowledge;
- (f) develop innovative schemes of collaboration between institutions of higher education and different sectors of society to ensure that higher education and research programmes effectively contribute to local, regional and national development;
- (g) fulfill their commitments to higher education and be accountable for the pledges adopted with their concurrence, at several forums, particularly over the past decade, with regard to human, material and financial resources, human development and

education in general, and to higher education in particular;

(h) Have a policy framework to ensure new partnerships and the involvement of all relevant stakeholders in all aspects of higher education: the evaluation process, including curriculum and pedagogical renewal, and guidance and counseling services; and, in the framework of existing institutional arrangements, policy-making and institutional governance;

(i) **Define and implement policies to eliminate all gender stereotyping in higher education** and to consolidate women's participation at all levels and in all disciplines in which they are under-represented at present and, in particular, to enhance their active involvement in decision-making;

(j) **Establish clear policies concerning higher education teachers**, as set out in the Recommendation concerning the Status of Higher-Education Teaching Personnel approved by the General Conference of UNESCO in November 1997;

(k) **Recognize** students as the centre of attention of higher education, and one of its stakeholders. They should be involved, by means of adequate institutional structures, in the renewal of their level of education (including curriculum and pedagogical reform), and policy decision, in the framework of existing institutional arrangements;

(l) **Recognize** that students have the right to organize themselves autonomously;

(m) **Promote** and facilitate national and international mobility of teaching staff and students as an essential part of the quality and relevance of higher education;

(n) **Provide** and ensure those conditions necessary for the exercise of academic freedom and institutional autonomy so as to allow institutions of higher education, as well as those individuals engaged in higher education and research, to fulfill their obligations to society.

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