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Determination of Key Performance Indicators Priorities aspects of Teaching Learning Process and Atmosphere Academic Study Programs in Private Higher Education

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Abstract: This study aims to identify and assign weights priorities Key Performance Indicators (KPIs) aspects of teaching, learning and academic atmosphere study programs on Private Higher Education (PHE) in the province of Sulawesi Selatan Indonesia. Analysis prioritizing KPIs performed through the identification, validation, specification and value analysis weights. The method used in this research is the method of determination of the average value of the important factors that the formulation of performance indicators and Analytical Hierarchy Process (AHP). The results have found in this study is to establish the 22 formulations of KPIs on aspects of teaching and learning and 9 on aspects of the academic atmosphere. Based on AHP analysis found that there are eight levels of priority KPIs on aspects of teaching, learning and five levels of priority to the aspects of the academic atmosphere. KPIs are a top priority in the aspect of teaching and learning process is the percentage of the syllabus that can be accessed and read by students and lecturers ($I_{TE.3}$) with a weight of 0.13. KPIs are a top priority in the academic aspect is the interaction of the academic atmosphere through special activities such as seminars, symposia, workshops ($I_{AA.2}$) with a weight of 0,197. The originality of this study was to elaborate these important factors into the formulation of KPIs on aspects of learning and academic environment needed by a program of study at PHE. Justifying the impact KPIs are a top priority on the performance of teaching, learning and academic atmosphere.

Key words: Key performance indicators, AHP, study program, learning, academic

INTRODUCTION

In Indonesia, at this time capacity of higher education services provided by the government can no longer accommodate the overall prospective students. They became the driving factor for community groups establish private institutions of higher education services in Indonesia. Community participation in education in Indonesia has been regulated in Law No. 20 of 2003 Section 54 (2) which among other things states that "the public can participate as implementers of education" and specifically for higher education has been stipulated in Government Regulation No. 60 of 1999. According to data Directorate General of Higher Education Ministry of National Education of the Republic of Indonesia number of private universities in Indonesia 3124 PHE and fostering 11,000 courses. Beradasarkan these data demonstrate that higher education is quite competitive. The increased intensity of competition of higher education services in Indonesia, especially in the area of South Sulawesi is the driving factor of private colleges to improve competitiveness. PHE competitiveness can be achieved through the provision of higher education services with high performance. Competition PHE is a driving force to conduct a self-evaluation, performance measurement and continuous improvement.

PHE excellence is determined by the performance of the implementation of the study program. To manage the program of study to be a high-performance, then performance measurement instrument is required. Pursuant to regulations required by the National Accreditation Board of Higher Education (BAN-PT) then any study programs required to improve performance. Performance improvement study programs can be done well if it has the ability to measure the performance because the repair can be done when the scalable performance. To facilitate the process of measuring performance on the course, it is necessary to set priorities Key Performance Indicators (KPIs). Identification and prioritization of Key Performance Indicators (KPIs) can

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ease the process of measurement and improvement of performance because KPIs can play a role to provide information about the activities that must be done in improving the performance (Parmenter, 2010). KPIs are the basis for evaluating the performance assessment quantitative measurements to test improvements in innovation (Cox *et al*., 2003). KPIs is an important feature to get the necessary feedback in the planning and evaluation and a summary to establish the critical factors for the success of the organization or department (Wu and Lin, 2008). KPIs should be evaluated on a regular basis and if it does not meet performance targets, the process needs to be modified (Arif and Smiley, 2004). KPIs includes several components, namely the actual results of the indicators, targeted pursued indicator, the difference between the target results and the actual results and the values of cues, or benchmark (Lyddon and McComb, 2008). Determining KPIs in educational institutions should include all stakeholders (Arif and Smiley, 2004) and will have a direct impact on the primary budget (Conlon, 2004). Identification of performance measurement in all units is essential to improve the success of the program and students (Manning, 2011). The performance of private higher education institutions is very determined by the performance study program. To improve the performance of the study program, it is necessary to identify the key performance indicators on aspects related to the implementation the program. The purpose of this study is to identify and establish the order o priority KPIs on aspects of teaching, learning and academic atmosphere of undergraduate study programs at private universities in South Sulawesi of Indonesia. Improving the quality of students is largely determined by the performance of teaching, learning and academic environment study program. Identification and prioritizing on both aspects is needed to set the priority focus of academic performance improvement study program at PHE.

MATERIALS AND METHODS

This study was conducted in South Sulawesi, Indonesia with a population of 55 programs of study on PHE while samples in this study are the chairman of the program of study as a representation of respondents in each program of study. Stages of research include field surveys, literature studies, the formulation of the problem, goal setting, data collection, data processing, interpretation of the data processing and conclusion. This study used two types of questionnaire. The process of data collection is done through surveys and interviews. In the first questionnaire instrument used 5 scales associated with validation of the importance of KPIs such as 1 = very important; 2 = not important; 3 = less important; 4 important and 5 = very important whereas in the pairwise questionnaire using a scale of 1-9 for the assessment of the level of the comparison.

Based on the scope of the discussion concerning aspects of the performance indicators on aspects of learning, teaching and academic atmosphere. These factors were elaborated into KPIs, followed by validation and specification of KPIs. Based on identification and determination of KPIs on aspects of teaching, learning and academic atmosphere of the study program, then performed determination of priority scale KPIs using Analytical Hierarchy Process approach/AHP (Saaty, 1993).

RESULTS AND DISCUSSION

Analysis of priorities KPIs aspect of teaching and learning process: The process of learning and teaching is a learning experience gained through the learning activities. Learning activities can be done in the form of face to face lectures, long distance lecture, practice, training, internships, seminars, workshops, symposia, discussions and other learning tasks. Teaching at the course in the PHE requires a variety of approaches, strategies and techniques that challenge the order to direct the learners to be able to think critically, be creative, explore and experiment with the use of a variety of learning resources (BAN-PT, 2008). Operational activities study programs at PHE ideally using learning-oriented approach to students (learned oriented). Which can motivate students to learn independently and in a group effort skills development, behavior and personality (soft skills). Based on the results of data processing, it can be described the formulation of KPIs related to aspects of the teaching and learning the process in the implementation of the study program as shown in Table 1.

Based on an identification of KPIs on aspects of teaching and learning process, it was found there was 22 formulation of KPIs. The formulation of KPIs specified based on those survey results, validation and specification, then discovered the value of the degree of importance of performance indicators related to aspects of the teaching and learning process. Broadly speaking, the result of the identification of KPIs that have been formulated regarding the importance of the use of the

Table 1: The formulation of KPIs aspects of teaching and learning process in the study programs at the PHE

Description of Key Performance Indicators (KPIs)	Abbreviation
The percentage of faculty who use the syllabus and plan learning activities	$I_{TE.1}$
The percentage of subjects who had reference unit teaching, syllabus and plan to learn activities each semester	$I_{TE.2}$
Percentage of SAP, syllabus which can be read and accessed by students and lecturers.	$I_{TE.3}$
Percentage of textbooks contained in the syllabus is available in the reading room study program	$I_{TE.4}$
The percentage of subjects that are equipped with the diktat/handouts/lecture notes/textbook	$I_{TE.5}$
The percentage of subjects that course materials can be obtained via the Internet	$I_{TE.6}$
Percentage of lecture halls equipped with learning facilities such as LCD, sound system, OHP, screen, etc.	$I_{TE.7}$
The availability of the Internet in support of teaching and learning activities	$I_{TE.8}$
The availability the room and audio-visual equipment for lecturers	$I_{TE.9}$
The average percentage of attendance lecturers in teaching and learning activities for one semester	$I_{TE.10}$
The availability of the rules for the professors to give assignments/quizzes, correct and restore it	$I_{TE.11}$
Availability of system controls the number of students in a class in parallel courses	$I_{TE.12}$
The percentage of subjects who declared value on time	$I_{TE.13}$
Availability of policies and procedures for student learning outcomes assessment	$I_{TE.14}$
Availability of the evaluation system, the success/satisfaction of the learning process of each semester	$I_{TE.15}$
The percentage of lecturers who have poor teaching performance according to student assessment	$I_{TE.16}$
Percentage increase their teaching practice courses that satisfy students	$I_{TE.17}$
Availability of instruments and mechanisms for monitoring the implementation of the learning process on the course.	$I_{TE.18}$
The ratio of the number of students with faculty academic guidance counselors	$I_{TE.19}$
Pembibingan system availability thesis contained in guidebooks	$I_{TE.20}$
The frequency of repair activity learning system that includes materials, teaching methods, the use of learning technologies and ways of evaluation	$I_{TE.21}$
Testing system availability levels of difficulty, test validity (validity) and reliability (reliability) exam	$I_{TE.22}$

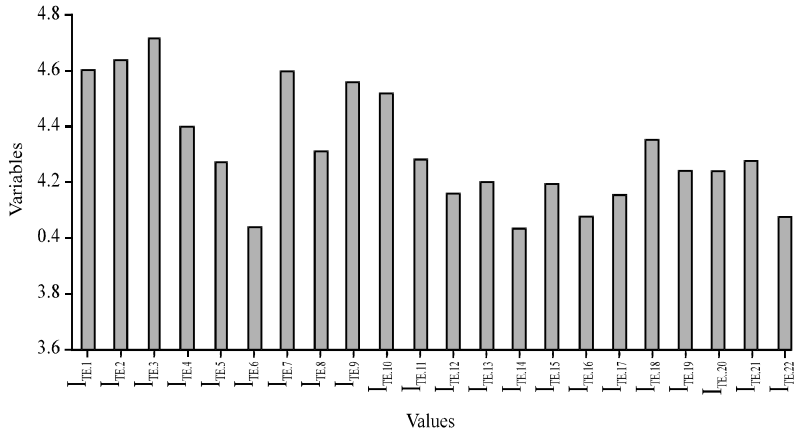

Fig. 1: Graph the average value of interest of level KPIs aspest of teaching and learning process

syllabus, teaching reference unit and learning plan every semester. The formulation of KPIs others relating to the availability of reference books courses, internet facilities to facilitate access to learning materials, learning facilities, the availability of facilities lecture halls and means of supporting teaching and learning process, the level of the presence of lecturers and students, a system of policies and procedures for the assessment, the increase in the percentage of satisfaction activities learning, availability of instruments monitoring the learning process and the frequency of improvement of learning methods, the use of learning technologies and ways of evaluation.

All KPIs that have identified are basically important to be used as the basis to evaluate the performance aspects of the process of learning and teaching the study programs at PHE. This was confirmed by the results of the validation KPIs teaching and learning the process, which shows that the average value of the interest generated by the survey results is ≥4, as shown in Fig. 1. Average value of interests of rate have found to be the basis for establishing the level of interests of KPIs aspect the comparison teaching and learning process PTS the study program. The level of interests of is transformed into filling out the questionnaire pairwise comparison matrix to generate importance level.

The matrix of pairwise questionnaire results was analyzed using Analytical Hierarchy Process (AHP). The results of the analysis of weighting priority KPIs on aspects of teaching and learning can be seen in Table 2.

Table 2: Values weight and priority level KPIs aspect of teaching and learning process

KPIs	Values	Level priorities
I_{TE1}	0.07	3
I_{TE2}	0.09	2
I_{TE3}	0.13	1
I_{TE4}	0.05	6
I_{TE5}	0.03	7
I_{TE6}	0.02	8
I_{TE7}	0.08	4
I_{TE8}	0.05	6
I_{TE9}	0.08	4
I_{TE10}	0.06	5
I_{TE11}	0.03	7
I_{TE12}	0.03	7
I_{TE13}	0.03	7
I_{TE14}	0.02	8
I_{TE15}	0.03	7
I_{TE16}	0.02	8
I_{TE17}	0.03	7
I_{TE18}	0.05	6
I_{TE19}	0.03	7
I_{TE20}	0.03	7
I_{TE21}	0.03	7
I_{TE22}	0.02	8

λ_{marks} = 22.810; CI = 0.0386; RI = 1.647; CR = 0.023

All the weight values of KPIs priority aspects of the learning process is acceptable because it has value inconsistency ratio (CR)<0.1 (Saaty, 1993). On the results of processing found that there are eight levels of priority KPIs aspect of teaching and learning process. Level the first priority is $I_{TE.3}$, the second priority is $I_{TE.2}$ the third priority is $I_{TE.1}$, fourth priority includes $I_{TE.7}$ and $I_{TE.9}$, fifth priority is $I_{TE.10}$, sixth priorities include $I_{TE.4}$, $I_{TE.8}$ and $I_{TE.18}$, $I_{TE.5}$ seventh priority include $I_{TE.11}$, $I_{TE.12}$, $I_{TE.13}$, $I_{TE.15}$, $I_{TE.17}$, $I_{TE.19}$, $I_{TE.20}$ and $I_{TE.21}$. Priority KPIs that are at the eighth level includes $I_{TE.6}$, $I_{TE.14}$, $I_{TE.16}$ and $I_{TE.22}$.

KPIs priority levels of the weight scale are very important to be used as a reference in doing the grating and improving performance. KPIs that have the greatest weight is an indicator that the focus of attention in the measurement and improvement of performance. The succession of performance indicators that are on level 1-3 is $I_{TE.3}$, $I_{TE.2}$ and $I_{TE.3}$. The third is related KPIs Teaching Reference Unit (SAP) and the course syllabus owned by lecturers and can be accessed and read by students and lecturers. Unit of reference of teaching and learning syllabus is an instrument that can serve as an effective facilitator for student learning (Grunert, 1997; Pastorino, 1999). To achieve that goal in improving learning performance, then the instructor should provide a syllabus that can be read so that it can be used with ease.

The values that students learn the syllabus can contribute as an instrument of education. Syllabus is a very valuable educational instrument to introduce the learning contract and expectations will be achieved by lecturers and students (Eberly *et al*., 2001).

Syllabus is very important for the improvement of learning performance because through the syllabus instructor can proactively prevent violations in the future through the delivery of information regarding rules and the consequences in the syllabus (Mintu *et al*., 2010). Syllabus is a tool that can be a unit of reference and learning plan, so it is a very important instrument in supporting the performance of teaching and learning the process in the study programs. Syllabus contains information about the purpose of learning, learning measurement methods, learning services facilities, service needs, learning materials, duties and responsibilities of students in the learning process and a description of reflection teaching and learning process (Ballard and Elmore, 2009). Priority KPIs learning process at the level of 4 related with classroom facilities and teaching facilities. Facilities teaching and learning in the classroom are needed to improve the quality of education, so it takes the classroom setting is modern and based on information technology (Okeke, 2013). Classroom facilities is a factor supporting the success and sustainability of the learning process (Ezeocha and Nosiri, 1990) and is the place to achieve educational goals and learn self-control for students (Okon and Sole, 2006). To improve the academic achievement of students it must be supported by the physical environment of classrooms with adequate facilities.

Classrooms with adequate facilities can provide a sense of comfort for the student in the learning process so that a significant impact on the concentration and student achievement (Suleman and Hussain, 2014). Increased student achievement strongly influences the performance of teaching and learning process course at a private university in South Sulawesi, Indonesia.

Analysis of priorities KPIs aspects of courses in the academic atmosphere: Based on the results of the identification of the predefined 9 formulations of KPIs needed on aspects of academic atmosphere course at which PHE can be seen in Table 3. All KPIs were identified it is important to form the basis for evaluating the performance aspects of the academic atmosphere study programs at PHE. This was confirmed by the results of the validation KPIs academic atmosphere which shows that the average value of interests of generated by the data processing is = 4 as shown in Fig. 2.

Average value of interests of rate was found to be the basis for establishing KPIs interests of the comparison to aspects of academic atmosphere study programs at PTS. The level of interests of is transformed into filling out the questionnaire pairwise comparison matrix that generates importance level. The results of the analysis of the determination of the weight of the priority aspects KPIs

Table 3: The formulation of KPIs aspects of academic atmosphere in the study programs at the PHE

Description of Key Performance Indicators (KPIs)	Abbreviation
Availability of rules written policies on scientific autonomy, academic freedom, freedom of academic forum, faculty-student partnerships	$I_{AA.1}$
Realization of academic interaction in the form of special academic activities in the form of seminars, symposia, workshops, book, etc	$I_{AA.2}$
Availability schedule of academic consultation between students and lecturers academic advisors.	$I_{AA.3}$
Availability schedule a meeting with the supervisor-student final assignment	$I_{AA.4}$
Percentage of students who are economically disadvantaged have received scholarships	$I_{AA.5}$
The number of computers connected to the Internet to support the academic activities of students	$I_{AA.6}$
The percentage of students who have access to information about the Ethics and Rules of Student Life in Campus	$I_{AA.7}$
The number of students has been involved as a team member in research activities and community service	$I_{AA.8}$
Implementation of the system of rewards and punishment on lecturers, students and supporting staff	$I_{AA.9}$

Table 4: Values weight and priority level KPIs aspect of academic atmosphere

KPIs	Value weights	Priorities level priorities
$I_{AA.1}$	0.112	3
$I_{AA.2}$	0.197	1
$I_{AA.3}$	0.112	3
$I_{AA.4}$	0.099	4
$I_{AA.5}$	0.061	5
$I_{AA.6}$	0.112	3
$I_{AA.7}$	0.123	2
$I_{AA.8}$	0.061	5
$I_{AA.9}$	0.123	2

λ_{aks} = 9.166 ; CI = 0.0145; RI = 1,45; CR = 0.01

academic atmosphere by using Analytical Hierarchy Process (AHP) can be seen in Table 4. All the weight values of KPIs priority aspects of an academic atmosphere is acceptable because it has value in Consistency Ratio (CR) = 0.01 or CR<0, 1 (Saaty, 1993).

Based on the results of data have processed in Table 4 showed that there are five levels of priority KPIs aspects of the academic atmosphere. First priority is associated with academic interaction in the form of specific activities in the form of seminars, symposia workshops, assessments books with weight value 0.197.KPIs that are at the second priority is $I_{AA.7}$ and $I_{AA.9}$, regarding access to information about the ethics and procedures for student life and the reward and punishment system. KPIs third priority includes $_{IAA.1}$, $I_{AA.3}$ and $I_{AA.6}$, issues related to scientific autonomy, academic freedom, a partnership of lecturers and students, the availability of academic advising activity schedules and availability of computer facilities connected to the Internet. KPIs on the fourth priority is $I_{AA.1}$ and KPIs in the fifth priority include $I_{AA.1}$ and $I_{AA.8}$.

KPIs the top priority to achieve the performance aspects of the academic atmosphere is a special student interaction activities in the form of seminars, symposia and workshops. Seminars, symposia and workshops can be done face to face or online. Implementation of the seminar can be useful as an innovative technique in curriculum development and knowledge of lecturers and students. Seminars can improve the percentage of students, creating an academic atmosphere more interactive between students and lecturers. It has been

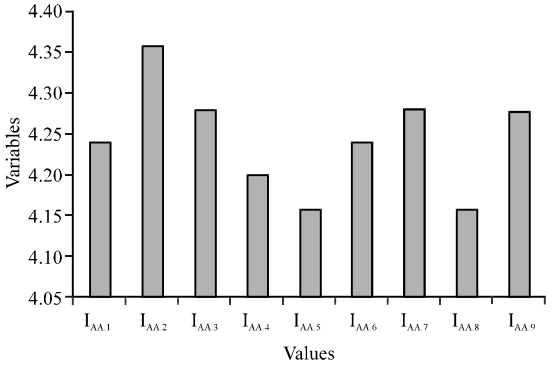

Fig. 2: Graph the average value of intrest of level KPLS aspects of academic atmosphere

proven empirically that the seminar can positively impact learning complex (Padgett *et al*., 2013) and increase familiarity and more academic atmosphere (Chakradeo, 2012). Academic interaction through workshops could also impact on the academic atmosphere because it can improve skills, analytical and writing for students. This is confirmed by the results of research which stated that the workshop activities can improve student writing skills and thoroughness (Lam, 2010) develop new skills (Lyons, 2015). The description associated with the KPIs on key priorities proven scientifically to have an impact on the performance aspects of the courses in the academic setting PHE.

Determination of the weight of priority levels KPIs on the courses at PHE in Sulawesi Selatan, Indonesia is a result of research that could be addressed to improve performance. Values priority weight can be a reference for setting the sequence KPIs that are the focus of attention for performance improvement courses. The amount of weight will have an impact on the achievement of value on the measurement and improvement of performance targeted.

CONCLUSION

This study has focussed on the identification and prioritization of KPIs in study programs at the Private Higher Education (PTS) in Sulawesi Selatan province

of Indonesia. The analysis has found that there is 22 formulations of KPIs on aspects of teaching and learning and 9 on aspects of the academic atmosphere. The formulation of KPIs is essential to becoming a reference in determining the focus of important factors that become the priority scale measurement and performance improvement. In the aspect of teaching and learning processes have found there are 8 levels of priority while the aspect of academic atmosphere there are 5 levels of priority. The priority order of KPIs will have an impact on the achievement of performance on aspects of learning and academic atmosphere in PTS courses. KPIs priority weight value determines the value of target achievement KPIs priority weight value determines the value of target achievement of performance measurement. KPIs can provide the greatest performance impact on the learning aspect is $I_{TE.3}$, with a weight of 0.13 and $I_{AA.2}$ on aspects of academic atmosphere with weight value 0.197.

REFERENCES

Arif, M. and F.M. Smiley, 2004. Baldrige theory into practice: A working model. Intl. J. Educ. Manage., 18: 324-328.

BAN-PT., 2008. Accreditation Guidelines for Assessment of Undergraduate Studies Program. National Accreditation Board for Higher Education, Jakarta, Indonesia.

Ballard, S.M. and B. Elmore, 2009. A labor of love: Constructing a service-learning syllabus. J. Eff. Teach., 9: 70-76.

Chakradeo, N.N., 2012. Effective teaching-learning through classroom seminars: A case study. Solapur Univ. Res. J., 2: 92-97.

Conlon, M., 2004. Performance indicators: Accountable to whom?. Higher Educ. Manage. Policy, 16: 41-48.

Cox, R.F., R.R. Issa and D. Ahrens, 2003. Management's perception of key performance indicators for construction. J. Constr. Eng. Manage., 129: 142-151.

Eberly, M.B., S.E. Newton and R.A. Wiggins, 2001. The syllabus as a tool for student-centered learning. J. Gen. Educ., 50: 56-74.

Ezeocha, C.P. and O.A. Nosiri, 1990. Concept of Classroom Organization and Management. International Universities Press, Owerri, Nigeria.

Grunert, J., 1997. The Course Syllabus: A Learning-Centered Approach. Anker Publishing Company, Bolton, England.

Lam, R., 2010. A peer review training workshop: Coaching students to give and evaluate peer feedback. TESL. Can. J., 27: 114-127.

Lyddon, J.W. and B.E. McComb, 2008. Strategic reporting tool: Balanced scorecards in higher education. J. Appl. Res. Commun. Coll., 15: 65-72.

Lyons, P.B., 2015. Writing skills development for graduate students: Workshop intervention using a student-centered learning approach. J. Educ. Soc. Pol., 2: 38-49.

Manning, T.M., 2011. Institutional effectiveness as process and practice in the American community college. N. Directions Commun. Coll., 2011: 13-21.

Mintu, W.A., C. Kernek and H.R. Lozada, 2010. Netiquette: Make it part of your syllabus. J. Online Learn. Teach., 6: 2654-2657.

Okeke, F.N., 2013. Management of facilities in the classroom. J. Emerg. Trends Educ. Res. Policy Stud., 4: 100-104.

Okon, J.E and M.A. Sole, 2006. Management of the Nigerian primary school plant: Perceptions for effective practice. Nigerian J. Curriculum Stud., 13: 139-146.

Padgett, R.D., J.R. Keup and E.T. Pascarella, 2013. The impact of first-year seminars on college students life-long learning orientations. J. Stud. Aff. Res. Pract., 50: 133-151.

Parmenter, D., 2010. Key Performance Indicators: Developing, Implementing and Using Winning KPIs. 2nd Edn., Jon Wiley & Sons, Hoboken, New Jersey, ISBN:978-0-470-54515-7, Pages: 295.

Pastorino, E.E., 1999. Students with academic difficulty: Prevention and assistance. APS. Obs., 26: 10-11.

Saaty, T.L., 1993. Decision Making for Leader: The Analytical Hierarchy Process for Decisions in Complex World. University of Pittsburgh, Pittsburgh, Pennsylvania.

Suleman, Q. and I. Hussain, 2014. Effects of classroom physical environment on the academic achievement scores of secondary school students in kohat division, Pakistan. Intl. J. Learn. Dev., 4: 71-82.

Wu, C.S. and T.Y. Lin, 2008. Key performance indicators. J. Educ. Res., 167: 130-130.