GENDER STUDENTS ISSUES ON PHYSICS EDUCATION PROGRAM OF HIGHER EDUCATION IN INDONESIA

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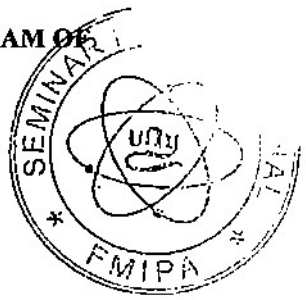

ABSTRACT

This paper reports on some of the findings from EPSBED especially on gender issues.. Half of students come from the higher education locate at Java and Sumatra (18) of 76 higher education In indonesia. Female students is 1,8 time greater than the male. This condition need attention in preparate them as future physics teacher by applying four perspective to minimize gender perception.

INTRODUCTION

Science traditionally is a subject in which educational outcomes are inequitable with regard to gender and, hence, of concern to the education of science teachers. For the most part, and especially beyond elementary school, sex differences are most visible in patterns of participation rather than performance, and there are numerous reviews and analyses of data sets which examine a range of differences or offer interpretations of the reasons for them (Rennie, 2002)

Evidence of a gender problem in science education came from surveys that compared performance across nations or across regions within a nation. Between the 1970s and 1980s, two IEA studies (International Association for the Evaluation of Educational Achievement) established a gender gap in favour of boys in all branches of science and the gap was found to increase with age. The performance gap was greater in the tests of physical science. Boys also showed more positive attitudes towards science than girls and reported a higher level of interest in science related activities. The overall gap in science performance was attributed to girls' lower performance on items testing understanding rather than recall of science (Patricia Murphy, 2000). The USA National Assessment and Educational Progress (NAEP) science surveys replicated the IEA pattern of performance (NAEP 1978). The British Columbia Science Surveys (BCSS) (Patricia Murphy, 2000), however, found boys ahead of girls only on tests of physics and measurement skills. The national surveys of science performance carried out in the 80s in England, Wales and Northern Ireland for pupils aged 11, 13 and 15 years old (Assessment of Performance Unit (APU)) also found that gender differences increased with age. These surveys, unlike others, included a broad range of test items which assessed scientific process skills and procedural understanding as well as concept application. The findings showed that across the ages girls' and boys' performance depended on the construct assessed, with girls outperforming boys on practical tests of making and interpreting observations while boys' superior performance was in the application of physical science concepts. The attitude questionnaire showed girls' interests lying in biological and medical applications and boys' interests involving physics and technological applications. (Elizabeth Whitelegg, 2007).

METHODES

The data obtained from EPSBED (Evaluation of Study Program Based on Self Evaluation) which can be reached on www.evaluasi.or.id. This is an official site of Directorate of higher education to monitor the all study program in Indonesia. The data updated two times a year at the mid of semester. Data used in this study are download at october 2009.

RESULT

There are 76 physics education study program with 18879 students. Half of the student numbers come from 20 institution as shown Table 1. More of students come from the state higher education (13). Unversitas Negeri Medan is a largest with 805 students, while IKIP PGRI Semarang is the largest number student of private higher education. It is interesting that more of institution locate at Java and Sumatra.

Figure 1 show the ratio between male and female students. Nationality. Female students (64%) is more than the male (36%) or 1.8 times. This result indicate that there is a tendency that for future physics teacher will be dominate by female teacher. Some institution has the ratio of female more than 2,5 time of male. Table 2 shows this ratio for some institution which more than national ratio. More of them come from the isntitution outside of Java.

Table 1. The Numbers of students of physics Education Program (20 top rank)

No	Higher Education	Male	Female	Total
1	Universitas Negeri Medan	312	493	805
2	Universitas Terbuka	395	317	712
3	Universitas Pendidikan Indonesia	211	398	609
4	IKIP PGRI Semarang	240	357	597
5	Universitas PGRI Palembang	106	424	530
6	Universitas Flores	202	300	502
7	STKIP Hamzanwadi	220	275	495
8	Universitas Syiah Kuala	104	375	479
9	Universitas Jember	147	328	475
10	Universitas Negeri Yogyakarta	201	268	469
11	Universitas Negeri Jakarta	182	284	466
12	Universitas Negeri Padang	102	363	465
13	Universitas Negeri Makassar	140	294	434
14	Universitas Negeri Semarang	177	255	432
15	Universitas Riau	118	307	425
16	STKIP PGRI Lubuk Linggau	116	304	420
17	IKIP Mataram	153	238	391
18	Universitas Negeri Malang	177	212	389
19	Universitas Kanjuruhan	162	197	359
20	Universitas Lampung	115	219	334
	Sum	3580	6208	9788
	National	6721	12158	18879

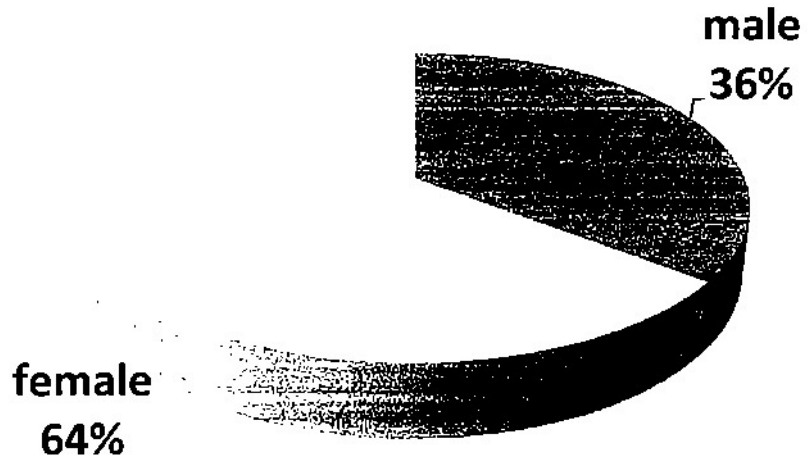

Figure 1. The percentage of the male and female of physics education program students

Table 2. The ratio of female/male students of physics Education Study Program

No	Higher Education	Female/male ratio
1	Universitas Abulyatama	4,86
2	Universitas PGRI Palembang	4,00
3	Universitas Katolik Widya Mandala Surabaya	4,00
4	Universitas Al Muslim	3,81
5	Universitas Muslim Nusantara Al-Wasliyah	3,78
6	Universitas Pattimura	3,76
7	Universitas Syiah Kuala	3,61
8	Universitas Negeri Padang	3,56
9	Universitas Darussalam Ambon	2,87
10	STKIP YDB Lubuk Alung	2,86
11	Universitas Sriwijaya	2,84
12	Universitas HKBP Nommensen	2,73
13	Universitas Mulawarman	2,63
14	STKIP PGRI Lubuk Linggau	2,62
15	Universitas Riau	2,60
	National	1,81

Gender-inclusive practice in science teacher preparation requires recognition of participants' initial perspectives about science and gender, and the use of strategies consistent with those perspectives to promote gender equity. Rinnie (2002) Willis' four perspectives are rephrased in terms of gender differences and science education

A Remedial Perspective

From this first perspective, explanations for gender differences focus on the students and accept the science curriculum as entirely appropriate. If some students are disadvantaged in some way, the problem is considered to lie with them. Some students, because of the social group to which they belong (in this case, girls), are thought to be less well prepared than others (in this case, boys) to benefit from the science education they are offered. Viewed from the remedial perspective, the solution is compensatory, and lies not with changing the prevailing science curriculum, but with providing those disadvantaged students with the missing skills, experiences, or motivation they need to study science.

A Non-Discriminatory Perspective

People who think about gender differences from this perspective focus on the way the curriculum is delivered. The problem of disadvantage is considered to lie in the way that the science curriculum is taught or assessed, although its content is regarded as unrelated to any disadvantage. Thus, if pedagogical practice or the way science is assessed favors the social and cultural background experiences of one sex more than the other, then both participation and outcomes will be gender-biased. For example, perhaps teachers spend more time interacting with boys than girls, perhaps the language, examples, and resources they use to explain concepts are more suited to boys' experiences, or perhaps the assessment tasks enable one group to demonstrate their knowledge and skills more easily than another group.

An Inclusive Perspective

Explanations of gender differences from the third perspective challenge the science curriculum itself as the likely source of disadvantage. The curriculum is not regarded as fixed, but a selection from many different possible curricula. However, when its content and sequence reflect the kinds of dominant cultural and social values which are stereotyped with respect to gender, then students in non-dominant social groups, like females, are forced to learn a science which is less well matched to their interests and experiences. This happens even when the best pedagogical and assessment practices are used. Thus, for example, the science curriculum might reflect cultural values which privilege some characteristics, such as objectivity and rationality, over others, such as subjectivity and intuition.

A Socially Critical Perspective

People who think about gender differences from this fourth perspective view the science curriculum as actively implicated in producing and reproducing gender inequality. Whereas the

inclusive perspective views females as not included in science, this perspective views them as actively excluded. The content and practice of science in schools and society are seen to work to maintain the dominant culture, values, and group interests, as suggested by a view of science as male, white, Western, and middle class, and thus excludes others. When viewed from this perspective, the problem of disadvantage in science education can be interpreted in terms of how science is used both inside and outside of schools to position and privilege some people over others in ways which are based on gender, race, class, culture, locality and personal abilities.

CONCLUSION

Higher education in indonesia has 76 physics education study program with female students 1,8 times of male student. This condition need attention in preparate them as future physics teacher by applying four perspective to minimize gender perception.

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