Article

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Relations industrielles / Industrial Relations, vol. 35, n° 1, 1980, p. 76-98.

Educational Opportunities and Geographical Distribution of Degree Teachers in Saskatchewan

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The purpose of this study is to examine the historical trend on the distribution of teacher skillmix between 1957 and 1974 in the light of certain changes in the socio-economic setting surrounding employment of teachers which occured during the period.

Equalization of educational opportunity throughout the province is a stated policy of the Government of Saskatchewan as it is of most political jurisdictions in North America. The quality of the educational services provided will be affected by many component factors such as library holdings, physical facilities and equipment, the curriculum, and abilities of educational administrators. However, given the nature of the educational process it would seem not unreasonable to believe that teacher skill may well be the single most important factor in determining the quality of educational experience that the children in the system will receive.

In an earlier study, the authors pointed out that even with the adoption of a single province-wide wage scale, "individual school boards are able to manage a skill-mix in such a way as to perpetuate a disequitable level of teaching skills"[1]. In essence, each local school board retains the authority and administrative discretion to determine the numbers of teachers in each skill class to staff the system. This finding has been obtained out of the analysis of cross-sectional data for 1970, 1971, and 1972. It became our intention, then, to investigate the historical trend in teacher skill-mix distribution. The purpose of this study, therefore, is to examine the historical trend in the distribution of teacher skill-mix between 1957 and 1974 in the light of

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1 WALMSLEY, P.Y., and M. OHTSU, "Teachers' Salary Differentials and the Quality of Educational Services in Saskatchewan". *Industrial Relations*, Vol. 30, No. 4, 1975, pp. 585-611.

certain changes in the socio-economic setting surrounding employment of teachers which occurred during the period.

The measure of teacher skill-mix used in this study is the degree teacher ratio in a local school board, that is, the number of teachers with at least four years of post secondary education expressed as a percentage of the total number of teachers employed by the board. In Saskatchewan teacher qualifications are assigned within a six class system, a university four year baccalaureate degree in education being the required standard for Class IV designation. Needless to say, the degree teacher ratio is not a perfect proxy of teacher skill-mix. There is little doubt that such factors as experience, innate ability and motivation affect actual teaching performance. Even so, the use of the percentage of degree teachers as a proxy of skill-mix is not an unreasonable choice.

In the fairly distant past it was generally true that the two-year Class II teaching certificate, as a minimum, was considered acceptable elementary school teaching and the university degree was preferred for secondary school teaching. This distinction is not now formally made and degree teachers are employed at all educational levels, though it is generally accepted by most people in the field that a four-year course constitutes a "better" rather than merely a "different" program of professional instruction. It is by no means universally accepted that the system would be better if all teachers were university graduates. Nevertheless, it is generally accepted that the total provincial educational system, the system at the school board level, and the individual school, is better served as the ratio of four-year teachers increases toward some optimal level that is above the present ratio for the system as a whole and probably for most sub-units within the system.

As will be observed shortly, geographical differentials in the degree teacher ratio among different school boards have narrowed steadily during the period of observation. Before formulating any hypothesis to explain this trend, we will first discuss the changes in the socio-economic setting which took place during the period.

CHANGES IN THE SOCIO-ECONOMIC SETTING

Changes in the socio-economic setting, which seem relevant to the distribution of degree teachers, took place in three areas; namely, collective bargaining structure, the financial role of the provincial government, and the supply of degree teachers.

First of all, collective bargaining has shifted from a local school board focus, to an area focus, and then to the present province-wide focus. Between 1949 and 1968, salaries were determined entirely at the local level, that is, between the local school board and the local unit of the Saskatchewan Teachers' Federation (STF) which for several decades has enjoyed, through legislation, the equivalent of a closed-shop arrangement. In 1968 local bargaining was replaced by an area wide bargaining arrangement wherein the entire province was divided into thirteen areas for the purposes of collective bargaining. The present Teachers' Collective Bargaining Act of 1973 replaced area bargaining by introducing the system of bi-level bargaining whereby salaries and certain allowances are negotiated on the provincial level; certain other issues being negotiated at the local level; and areas, which had existed as units for collective bargaining purposes only, ceased to exist. At the provincial level the management negotiation function is performed by a joint committee which includes members appointed by the Department of Education of the provincial government in association with members appointed by the Saskatchewan School Trustees Association (SSTA). This latter organization has for some considerable time enjoyed one hundred percent membership of the school boards in the province. The employee interest is represented by the STF.

This centralizing development eliminated differences in wage scales among the various units and city districts except for the northern areas which were treated as special cases. That is, salaries for all teachers in the province are presently determined within a single scale with the result that teachers having the same qualifications and years of service receive the same salaries anywhere within the system except in the far northern districts as indicated. It is important to note that this centralizing tendency in the bargaining structure has not been accompanied by comparable centralization of overall administrative authority and functioning, either during the Area phase at the provincial level or presently on a provincial basis. That is, the significant administrative functions such as control of budgets, as well as hiring and firing of teachers, have remained with the local school boards.

However, there can be documented an increasing contribution by the provincial government to the financing of primary and secondary education. In an arrangement that is probably somewhat comparable to most other jurisdictions in North America, financing of public schools in Saskatchewan has been shared between local school boards and the provincial government. Although the latter body has a significant supervisory responsibility and operational influence, budgeting control has always remained the formal responsibility of local school boards. Until 1971 the amount raised by local communities in the form of property taxes always exceeded the

amount of operating grants by the provincial government. This relationship has been reversed since 1972 and as late as 1975 the amount of operating grants was much higher than the amount of local taxes (140 million dollars and 101 million dollars respectively)[2].

Another manifestation of the increasing intrusion of the provincial government in education at the local level is the change in the government's grants policy. Although equalization of the financial capabilities of the local school boards throughout the province was one of the important objectives of the government, it was not until 1971 that a more systematic approach was taken to achieve that objective. The grants formula which had been used prior to 1971 was rather complex. The total operating grant consisted of such items as the basic per diem, the average daily attendance, the conveyance and the equalization grants. In other words, only a portion of the total grant was used for the purpose of equalization. In 1971 a new formula was created after several years of study of the grant systems of other provinces. This formula was much simpler in that the amount of total operating grant was determined to be the difference between the "recognized" expenditure based primarily on the student enrollment and the "recognized" local revenues[3]. This formula made it much easier for the government to narrow geographical differentials in boards' total operating revenue simply by giving more grants to the board whose ability to collect local taxes was low.

The third change took place in the area of teacher education and training. Historically, two Teachers Colleges and the College of Education of the University of Saskatchewan were the main sources of teacher supply, although considerable numbers of teachers were recruited from outside Saskatchewan. The Teacher Colleges, which specialized in training teachers for elementary schools, provided a basic one year course of thirty six weeks duration which led to the Interim Standard Certificate. The University offered a variety of courses including those leading to the Standard Certificate after two years of study and the Professional Certificate after four years of study. Also, until 1952 the University directed its efforts to the training of

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2 The Department of Education, Province of Saskatchewan, *Annual Report 1975-76*, Regina, 1976, p. 75.

3 The recognized expenditure largely consisted of standard allowances based on a number of students enrolled in the school system. It also included actual payments of tuition fees by the school system, actual capital debt retirement, and allowances for the transportation of students. The recognized local revenues consisted of a computational mill rate multiplied by the equalized assessment of the school system, and tuition fees received from other boards, individuals, and the federal government.

teachers for highschools, after which year the College was authorized to train teachers for elementary schools[4].

In the 1950s, there was apparently a severe shortage in the supply of degree teachers. In 1954, for example, the number of students granted a B.Ed. degree from the University was 65, while as many as 110 degree teachers were recruited from other Canadian provinces and from abroad. Presumably, the supply of non-degree teachers was relatively less tight. In the same year, a total of 109 non-degree teachers were recruited from outside Saskatchewan, while the number of graduates from the Teachers Colleges was 634[5].

To a certain extent, the Teachers Colleges depended on the University for the education of its graduates. The Interim Standard Certificate issued after one year of training at the Teachers Colleges was a permit with a fixed period of validity. In order to obtain a permanent Standard Certificate, teachers holding the Interim Standard Certificate had to take five University classes during a specified period. In July 1965 the Teachers Colleges were integrated into the College of Education, and by 1970 the Interim Standard Certificate was abolished.

The integration of those two institutions and the subsequent abolition of the Interim Standard Certificate reflect the awareness by the parties involved, that is, the provincial Department of Education, the University, the STF, and the SSTA, of a need to upgrade the quality of teachers in the province. Especially, the STF was known as the prime advocate of the four-year Bachelor of Education program in the College of Education as a means of raising the status of the teaching profession. As a result of these changes, the supply of degree teachers increased substantially over the past two decades or so. During the academic year 1962-63, for example, 79 out of 1,116 graduates of the College of Education obtained the professional certificates, while during 1973-74 as many as 408 out of 1,015 graduates obtained the professional certificate[6].

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4 For a historical development in teacher training in Saskatchewan, see Walter L. R. KNIGHT, *Teacher Training and Certification in the Province of Saskatchewan from 1936-1965* (unpublished M.Ed. thesis, University of Saskatchewan), Saskatoon, 1969.

5 Figures for the number of recruits from outside Saskatchewan were obtained from Mr. J. S. Struthers, Chief, Teacher Services, the Department of Education. The number of B.Ed. degrees granted was obtained from Walter L. R. Knight, *op. cit.*, pp. 103. The number of graduates from the Teachers Colleges was obtained from The Department of Education, *Annual Report 1954-55*, Regina, p. 65.

6 The Department of Education, *Annual Reports 1962-63, 1973-74*, Regina, p. 41 and p. 41 respectively.

THE HYPOTHESES

A review of historical changes in the institutional settings leads us to the testing of the following three hypotheses: 1) centralization of the bargaining structure might give rise to a more uniform distribution of degree teachers among different school boards; 2) narrowing of geographical differentials in boards' ability to pay might cause narrowing tendency in geographical differentials in the degree teacher ratio; and 3) increased supply of degree teachers might result in a more uniform distribution of degree teachers.

Concerning the impact of teacher collective bargaining upon educational opportunity, Lieberman and Moskow state that local collective negotiations tend to intensify existing inequalities of educational opportunity. "In affluent school districts, teacher pressure may be effective in achieving greater expenditures for education. In poor school districts, such pressure will be relatively ineffective; the local school districts may simply not have the resources to meet teacher demands. Even if these demands are confined to teacher welfare, they will affect levels of educational opportunity."[7] It would seem reasonable to assume that within its financial constraints every board attempts to hire as many degree teachers as possible until it achieves some optimal degree teacher ratio, thereby providing better education for the student within its jurisdiction. Therefore, the discussion by Lieberman and Moskow may be interpreted as follows: If collective bargaining is done at the local level, affluent school districts will be able to offer higher salaries to degree teachers than less affluent districts. There will thus be created a skewed distribution of degree teachers between different school districts. On the other hand, centralized bargaining would contribute to a more uniform distribution of degree teachers because such bargaining will tend to bring about a uniform salary schedule thus eliminating the possibility of affluent districts achieving more desirable teacher skill-mix by manipulating salaries for a given skill level. This is the reasoning behind the first hypothesis.

The second hypothesis is based on the following reasoning: Even though the wage scale is standardized, it is within the jurisdiction of individual school boards to determine the number of degree teachers to be hired in any given year. Degree teachers are more expensive than non-degree teachers. Therefore, given more or less uniform willingness to employee degree teachers among different boards, financial ability to pay of in-

7 LIEBERMAN, M., and M. H. MOSKOW, *Collective Bargaining for Teachers: An Approach to School Administration*, Rand McNally and Company, Chicago, 1968.

dividual boards will to a great extent determine the demand for degree teachers.

As previously mentioned, financing of primary and secondary education is shared by the local school board and the provincial government. The grants policy of the provincial government is quite evidently designed to equalize financial capabilities as between individual school boards. This suggests that the geographical differentials in the degree teacher ratio may be largely determined by the actions of the provincial government in its attempts to narrow the geographical differentials in the ability to pay of individual boards.

The third hypothesis depends upon the assumption that because of a geographical preference on the part of the teachers, a uniform wage scale may not necessarily create a uniform distribution of degree teachers throughout the province. For example, the majority of teachers might prefer employment with a city rather than with a rural board, because of easier access to educational, cultural, and recreational opportunities that exist there.

When the supply of degree teachers is limited, a large proportion of degree teachers may have the opportunity to be hired by the city boards. This would create a skewed distribution of degree teachers. As the supply of degree teachers increases, the marginal attractiveness of those teachers to the city boards starts to decline and not all degree teachers will be absorbed into urban positions. As a result, there may be an overflow of degree teachers into the less-preferred rural districts.

Teachers' geographical preference might well exist not only between the urban and rural sectors, but also within the urban sector and within the rural sector. Therefore, as the supply of degree teachers becomes increasingly abundant, a larger number of degree teachers might be hired by the less preferred boards, thereby creating a more even distribution of degree teachers throughout the province.

These hypotheses form the theoretical basis for the analysis of the determining factor(s) of the geographical differentials in the degree teacher ratio. Here we will first offer the historical trends in the degree teacher ratio as well as the associated geographical differentials. All data presented in the subsequent sections have been obtained from various records kept by the Department of Education, Province of Saskatchewan.

HISTORICAL TRENDS IN GEOGRAPHICAL DIFFERENTIALS IN THE DEGREE TEACHER RATIO

Data on the degree teacher ratio have been obtained for 65 units of analysis and for the 17 years between 1957 and 1964, and between 1966 and 1974. Data for 1965 was not available. Among the 65 boards, 56 are rural units and 9 are city public units. There are at present 60 rural unit boards and 22 city boards of which 11 are public and the remaining 11 are separate boards. Analysis in the study excludes 4 unit boards, 2 city public boards and all city separate boards in order to maintain consistency in analysis because these boards, having come into existence during the time span of the data series used, would not therefore be represented in all years.

TABLE 1

Degree Teacher Ratio and Geographical Differentials in Degree Teacher Ratio for 1957-64, 66-74

	Degree Teacher Ratio			*Coefficient of Variation*			*Unit-City Dif*
	Total	*Unit*	*City*	*Total*	*Unit*	*City*	$\frac{(2)}{(3)} \times 100$
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
	%	%	%	%	%	%	%
1957	13.6	9.3	28.8	60.2	36.5	23.2	32.2
1958	14.2	10.0	27.8	53.4	31.1	22.4	35.9
1959	14.8	10.1	28.3	56.0	35.4	23.0	35.6
1960	16.5	11.5	30.0	49.4	34.4	22.1	38.3
1961	18.1	12.8	32.2	47.6	32.9	21.2	39.7
1962	19.5	14.1	32.8	42.4	27.6	21.7	42.9
1963	21.1	15.3	34.9	41.1	27.2	22.2	43.8
1964	22.5	16.4	36.5	40.0	25.2	27.0	44.9
1966	27.3	20.6	41.4	35.0	23.2	19.2	49.7
1967	29.3	21.2	45.3	40.9	28.5	18.9	46.7
1968	33.6	24.4	50.6	38.5	25.0	17.5	48.2
1969	36.5	26.7	53.2	36.5	23.7	14.5	50.1
1970	44.8	35.2	60.1	27.1	20.0	13.3	58.5
1971	46.4	37.1	61.2	25.4	19.0	11.7	60.6
1972	48.8	39.5	64.2	24.6	19.4	12.1	61.5
1973	51.7	43.0	65.3	22.4	18.7	11.1	65.8
1974	53.9	45.8	66.8	19.7	16.4	9.5	68.5

Source: Voir original.

Table 1 sets out historical data on the degree teacher ratio as well as geographical differentials thereof. The columns (1) through (3) provide the degree teacher ratios in the total boards, 56 rural unit boards, and 9 city

public boards respectively, while the columns (4) through (7) provide geographical differentials in the degree teacher ratios within the total boards, rural boards, city boards respectively as well as rural-urban differentials. The degree teacher ratio has been calculated by dividing the total number of degree teachers in each group by the total number of teachers in the respective group. As the index of the differentials in the columns (4) through (6), the coefficient of variation was used which was obtained by dividing the standard deviation of degree teacher ratios by the mean. Thus, when the coefficient of variation is large, the geographical differentials are also large. Finally, rural-urban differentials were calculated as percentage ratios of the degree teacher ratio in the unit boards in the Column (2) to that of the city boards in the column (3).

TESTING OF THE HYPOTHESES

The columns (1) through (3) of Table 1 indicate that there can be identified a consistent increase in the degree teacher ratio. This trend exists not only within the total boards, but also within the two subgroups, the unit boards and the city boards. Also, it is apparent that the degree teacher ratio was always higher among the city than unit boards. The columns (4) through (7) show that in each of the four categories differentials narrowed over the years and that the tendency is more or less consistent. Throughout the years, differentials were higher among the total boards than among the rural or city boards.

Apparently, there is a strong inverse correlation between the columns (1) and (4), (2) and (5), (3) and (6), and also there is a strong positive correlation between the columns (1) and (7). Especially noteworthy is the observation that when the total degree teacher ratio suddenly increased from 36.5 percent to 44.8 percent between 1969 and 1970 (Column 1), there was a corresponding sudden decrease in the total differential index from 36.5 percent to 27.1 percent (Column 4) and also in the unit-city differential index from 50.1 percent to 58.5 percent (Column 7).

In addition, cross-sectional comparisons of the relationship between degree teacher ratio and the differential index among different categories also indicate the existence of the same relationship. To take the values for the year 1957 as a point of illustration, the degree teacher ratio is lower among the unit than among the city boards (9.3 percent and 28.8 percent respectively), while opposite is the case with the differential index (36.5 percent and 23.2 percent respectively). These relationships are quite stable over the years.

The negative correlation between the degree teacher ratio and the differential index for various categories strongly suggest that the narrowing of geographical differentials in the degree teacher ratio was caused by the increase in the degree teacher ratio. This observation, seems to lend strong support to the third hypothesis, that increased supply of degree teachers might result in a more uniform distribution of degree teachers.

Needless to say, it is difficult to measure directly the supply of labour from any employment figures, because the level of employment is determined not only by supply conditions but also by the factors relating to the demand for labour. Nevertheless, the following set of employment and other data will be useful in inferring the trend in demand-supply relationship of degree teachers during the period (Table 2).

Student enrolment gradually increased between 1957 and 1969, but thereafter, it steadily decreased (Column 1). Since student enrolment at the elementary and secondary school level is the basic factor of the demand for teachers, the above trend indicates that the demand for teachers was increasing until 1969, but it was decreasing thereafter. This is reflected on the total number of teachers employed which shows a consistent tendency to increase until 1969 and thereafter to decrease (Column 2). Although demand for teachers in general and for degree teachers may not be perfectly correlated, it is safe to infer the demand for degree teachers declined after 1969. This observation is supported by the trend in the number of degree teachers (Column 3). Although the number of degree teachers steadily increased over the entire period, the annual rate of increase decreased drastically after 1969 with the exception of 1971-1972.

Probably the rather slow rate of increase in the earlier years is attributable to the supply rather than demand factors. Column 5 shows the number of graduates with a B.Ed. degree from the University of Saskatchewan. Although the number of B.Ed. graduates increased rapidly between 1957 and 1970 there was a consistent decreasing tendency thereafter. This tendency may be compared to the figures in Column 6 which shows the number of teachers newly hired from outside Saskatchewan. It is common knowledge that the board of education generally prefers to hire teachers educated in Saskatchewan to those educated elsewhere. Comparing Columns 5 and 6, it is apparent that teachers educated outside Saskatchewan constituted a significant source of degree teacher supply in the late 50's through early 60's. Since mid 60's their importance has declined substantially. This can be interpreted to mean that until early 60's the demand for degree teachers was so strong and the supply of degree teachers from within Saskatchewan was sufficiently limited that the boards were forced to

TABLE 2

Enrolment and Number of Teachers for Various Categories for 1957-1974

		No. of Teachers Employed				
	Enrolment(1) (in thousand)	*Total(2)*	*Degree Teachers(3)*	*Annual Increase(4)*	*No. of B.Ed. Graduates(5)*	*No. of Teachers Recruited from Outside Sask.(6)*
1957	191	8,107	1,123	-	84	54
1958	195	8,284	1,198	6.6%	91	42
1959	202	8,521	1,256	4.8%	119	38
1960	209	8,812	1,428	13.6%	126	78
1961	216	9,055	1,615	13.0%	245	60
1962	224	9,469	1,797	11.2%	226	68
1963	225	9,758	1,986	10.5%	230	85
1964	236	10,146	2,219	11.7%	314	62
1965	242	10,744	2,674	20.5%	396	49
1966	246	11,235	3,078	15.1%	509	32
1967	249	11,514	3,394	10.2%	516	43
1968	253	11,907	4,017	18.3%	697	49
1969	257	11,984	4,342	8.0%	771	60
1970	257	11,013	4,468	2.9%	856	29
1971	253	10,873	4,681	4.7%	823	51
1972	249	10,977	5,303	13.2%	832	63
1973	240	10,620	5,607	5.7%	798	85
1974	231	10,566	5,790	3.2%	782	71

Source: A. For no. of B.Ed. figures, University of Saskatchewan, *Annual Report*, published annually.
B. For other statistics, Department of Education, *Annual Report*, published annually.

employ relatively large number of degree teachers from outside Saskatchewan. In the late 60's and thereafter, weak demand coupled with sufficient supply of indigenous B.Ed. graduates made reliance upon out-of-province degree teachers much less important.

Such data seem to offer evidence in support of a conclusion that relative to the demand, the supply conditions of degree teachers gradually changed from scarcity to abundance over the period. For reasons previously given the increasing abundance of degree teachers helped to bring about an ever more even distribution of degree teachers throughout the province thereby causing various differential indices to narrow over the years.

Acceptance of the third hypothesis does not necessarily mean that the other two hypotheses have been rejected because the three hypotheses may not be mutually exclusive. Rather, they may be supplementary one with another. We will examine the remaining two hypotheses, namely, the bargaining structure hypothesis, and the ability to pay hypothesis.

The fact of area bargaining might, of itself, suggest that the rural-urban differentials in the degree teacher ratio tend to narrow under area bargaining, because such bargaining would bring into being a single salary schedule for all local boards, rural and urban, within its scope. Insofar as this involved increased pay scales to some school boards there would presumably be brought about more attractive terms of employment, at least to some previously lower pay scale boards. Also, area bargaining would make the practice of pattern bargaining much easier by reducing substantially the number of bargaining relationships. These two effects would tend to reduce not only rural-urban differentials in the degree teacher ratio, but also all other kinds of differentials.

Table 3 below provides average wages (mid-point of the scale) for Class 4 teachers for the selected years as well as two measures of differentials thereof, i.e. total differentials measured by the coefficient of variation and rural-urban differentials where rural unit wages are shown as a percentage ratio of wages in city districts. Years 1958, 62 and 66 fall in the period when bargaining was done at the local level, while 1969 and 1972 are the years when the first and last area agreements were made respectively.

As expected, area bargaining narrowed both kinds of wage differentials. In terms of total differentials, the differential index decreased from 3.1 in 1966 to 1.9 in 1969 through 0.5 in 1972. Also, relative wages in rural unit increased from 93.5, 97.4 and to 99.9. Those figures are consistent with the trends in geographical differentials in the degree teacher ratio during the period as observed in Table 1. It seems that area bargaining, by narrowing

all kinds of geographical wage differentials, created a more even distribution of degree teachers in the province. However, changes in wage differential indices in the earlier years are not as consistent as the narrowing tendencies in differential indices of the degree teacher ratio. For example, while total wage differentials index increased from 2.8 in 1958 to 3.1 in 1962, degree teacher ratio differentials decreased from 98.3 to 93.5 between 1962 and 1966, degree teacher ratio differentials narrowed from 42.9 to 49.7.

TABLE 3

Average Wages for Class 4 Teachers

		Average Wages			*Wage Differentials*	
	No. of Scales	*Total*	*Unit*	*City*	*Coefficient of Variation*	*Unit - City Differentials*
1958	70	$4,862	4,835	4,963	2.8%	97.4%
1962	72	5,790	5,769	5,863	3.1%	98.3%
1966	74	7,240	7,140	7,631	3.1%	93.5%
1969	19	8,784	8,650	8,875	1.9%	97.4%
1972	11	10,067	10,056	10,068	0.5%	99.9%

Data Source: Collective Bargaining Agreements

Thus, there does not seem to be a consistently high correlation between wage scales and degree teacher ratios throughout the entire period. This may result partly because the degree teacher ratio is affected not only by the level of wages of degree teachers, but also by wage differentials between degree and non-degree teachers. That is, the degree teacher ratio may not be high in a board that pays high wages to both degree and non-degree teachers, because such a board is attractive not only to degree teachers but also to non-degree teachers. Evidently bargaining structure, of itself, does not necessarily affect wage differentials between degree and non-degree teachers.

The above observations suggest that although change in bargaining structure from local to area level created a situation that was conducive to a more even distribution of degree teachers, the narrowing tendency in the degree teacher ratio differentials prior to the introduction of area bargaining cannot be explained by the nature of bargaining structure itself. The consistently narrowing tendency in all kinds of differential indices throughout the entire period strongly suggests that more crucial influence has resulted from factors operating more directly within the dynamics of the labour market.

We will now turn to the examination of the "ability to pay" hypothesis. According to this hypothesis, the degree teacher ratio in a given board is determined primarily by the board's ability to pay which, in turn, is significantly affected by the provincial government's "equalization" grants policy.

Probably the first step should be to examine whether or not ability to pay of boards does in fact affect their degree teacher ratio. Based on prior investigation it was decided to measure ability to pay by using a per-pupil total operating revenue less pupil transportation costs and the purchase of educational services from other systems (to be called net operating revenue). These latter adjustments were made because such items tend not to be discretionary and are to some extent recognized as unique and extraordinary expenses to municipalities. These two items vary quite widely and not to deduct them would tend to overstate the "net" ability to pay of certain boards which receive considerable sums that are necessarily committed to these categories of expenditures.

Table 4 below shows the average net operating revenue as well as unit -city differentials thereof. Ability to pay of rural unit boards seems slightly worsened during the period, although there was an improvement between 1970 and 1974. This trend, when compared with our earlier findings about unit-city differentials in the degree teacher ratio in Table 1, shows that correlation is negative for 1962-1966, while it is positive for 1966-1974. This means that ability to pay seems to have affected the degree teacher ratio differentials after 1966, but prior to that it has no positive bearings.

TABLE 4

Unit-City Differentials in Ability to Pay (65 Boards)

	Total	*Unit*	*City*	*Unit-City Differentials*
1958	NA	295	NA	NA
1962	$320	317	341	92%
1966	419	413	459	89%
1970	574	558	672	83%
1974	888	867	1019	85%

Source: Department of Education, various records.

Turning to overall differentials, a linear simple regression equation with the percentage degree teachers ratio as the dependent variable, and the net operating revenue as defined above as the independent variable, has

been estimated for cross-sectional data for five selected years. The following Table 5 summarizes the results:

TABLE 5

Coefficient of Determination (R^2) for Correlations Between Degree Teacher Ratio and Net Operating Revenue (65 Boards)[8]

Year	R^2	*F*
1958	.10*	7.0
1962	.12*	8.7
1966	.10*	6.7
1970	.37**	37.2
1974	.44**	50.5

* means statistical significance at the 5% test level.
** means statistical significance at the 1% test level.

The findings summarized in Table 5 are in general agreement with our earlier findings about rural-urban differentials in that ability to pay has important bearings on the degree teacher ratio after late 60's Although all R^2 values in Table 5 are statistically significant at least at the five percent test level, for the first three years (1958, 62, 66) the boards' ability to pay accounts for only ten percent or so in the total variation in the degree teacher ratio, while for the latter two years (1970, 74) forty percent or so of the total variation is explained by the boards' ability to pay.

As mentioned before, prior to 1968 collective bargaining was done at the local level. This means that it would have been much easier for an affluent board to attract as many degree teachers as it wanted simply by offering higher salaries. In other words, we expect higher correlation between individual boards' ability to pay and the degree teacher ratio prior to rather than after 1968 when the salary scales came to be determined by centralized bargaining bodies. In this sense, the above findings are contrary to what is logically inferred from the institutional developments in the bargaining structure.

Probably, this apparent puzzle may be resolved by referring back to the "supply push" hypothesis which was discussed before. The findings of the hypothesis suggest that since supply of degree teachers was limited in the earlier years, employment of degree teachers was determined primarily by geographical preference on the part of degree teachers rather than any

8 The definition of net operating revenue for city boards in 1958 is slightly different from that which was stated earlier.

demand-related factor. In view of this, the rather low R^2 values for 1958, 62 and 66 are a reflection of the fact that during the period teachers were able to find employment with the boards which they preferred, little or no constraint being exercised by the board's ability to pay.

However, increased supply of degree teachers created a situation by 1970 wherein degree teachers could no longer determine their employment on the basis of geographical preference. The fact that the R^2 value is high for 1970 and 1974 strongly suggests that given more or less sufficient supply of degree teachers, the degree teacher ratio is largely determined by the ability to pay of the individual board. From the above discussion, we can safely say that the ability to pay hypothesis and the supply push hypothesis are not mutually exclusive; rather they are supplementary to each other.

We will now turn to the question of how the Provincial Government affected the ability to pay of individual boards through the so-called "equalization" grants policy. Since boards' total operating revenue consists of two major items, local taxes and the Government's operating grants, the Government can narrow geographical differentials in boards' total operating revenue simply by giving more grants to the boards whose ability to collect local taxes is low. Also, as the amount of grants relative to the amount of taxes increases, the Government will come to exert stronger influence over the total ability to pay of the individual boards.

Table 6 summarizes some key figures to examine the above relationships. In calculating simple correlation coefficients between local taxes and the Government grants, two expenditure items, pupil transportation and payment to other systems were deducted from the Government grants for the reasons given previously. The residual amounts provide the net operating grants.

TABLE 6

Correlation Between Taxes and Net Operating Grants and Grants-Tax Ratio (65 Boards)

Year	*Correlation Between Taxes & Net Operating Grants*	*Grants-Tax Ratio (%)*
1958	-.65	59.4
1962	-.75	69.3
1966	-.67	77.9
1970	-.76	81.5
1974	-.81	125.1

These findings, summarized in Table 6, are consistent with our expectations. First of all, for all years, correlation between taxes and net operating grants is negative (Column 1), meaning that more grants were given to the "poor" boards, and that the magnitude has been increasing. Secondly, the grants-tax ratio has increased over the years. Clearly there seems to be an inverse relationship between Column 1 figures and figures in Column 2. Overall, then, it seems fair to say that the Provincial Government, through equalization grants policy and by accepting larger financial responsibility, has contributed to the narrowing of the ability to pay differentials of the local boards. This has indirectly resulted in a more uniform distribution of the degree teachers throughout the Province.

SUMMARY

This study has attempted to identify the key factors which determine the distribution of the degree teachers among local boards of education in Saskatchewan. Our analysis suggests that the most important factor is the total supply of degree teachers. A number of studies done by us and by other authors have consistently recognized a geographical preference among teachers for urban as against rural positions. In earlier years degree teachers in Saskatchewan, being in short supply, tended to concentrate toward the urban end of an urban-rural employment continuum thereby creating a skewed distribution. However, as the supply of the degree teachers increased, they became more evenly distributed because many of them were pushed further along the continuum away from the point of maximum preference. For any particular level of degree teacher supply there presumably would be for each board some optimal degree/non-degree teacher ratio. Hence the attractiveness of additional degree teachers to school boards would begin to decline as the actual degree teacher ratio approached this accepted optimal ratio.

In a condition of approximate balance between the supply and demand of degree teachers, the distribution of this class of teachers would tend to favour those school boards which have an advantage in respect of the ability to pay. That is, a board with higher ability to pay can afford to hire relatively large number of degree teachers who are more expensive than non-degree teachers, while a "poor" board simply cannot do so. Therefore, the fact that geographical differentials in the degree teacher ratio has narrowed in recent years, reflects at least in part a narrowing tendency in the ability to pay of individual boards. The reduction of differences in ability to pay results from a grants policy on the part of the Provincial Government which was designed to assist in producing just that effect.

Although centralization of the bargaining structure created a favourable condition for a uniform distribution of the degree teachers by achieving increasingly uniform salary scales, it does not seem to have played a crucial role. This is so because even though salary scales are determined centrally, actual hiring authority is entirely in the hands of local boards, and it is the sum total of all individual employment decisions that directly determines the distribution of degree teachers.

By 1974, centralized bargaining as well as the Government's equalization grants policy had been firmly established. Nevertheless the distribution of the degree teachers was far from uniform. Especially the urban-rural differentials were still sizeable even though the trend toward a continually narrowing differential was evident.

SOME COMMENTS ON THE IMPLICATION OF THE FINDINGS FOR FUTURE POLICY

This present paper provides evidence that insofar as degree teachers are becoming more evenly distributed throughout the Province, this seems to be primarily a function of the supply factor. Hence the fact of more equal distribution can be understood as being a consequence of a general policy orientation, a manifestation of the ideology and influence of the Provincial Government. But the mechanism through wich more equal distribution is being brought about can be understood as the adoption of a particular strategical choice. The relationships between the actors within a system of economic power tend to be viewed as being adversary in central thrust because of the apparent inevitability that competing interests will continually surface between them. However, insofar as such power relationships can be viewed as closed systems there is also the possibility of a fortuitous collusiveness existing among the major actors, the consequences of which may be adverse to all interests not represented or at least not adequately represented within the system. For example, it would not be surprising to discover that of a number of avenues that were open for the achievement of a goal mutually desired by the actors within the system, the particular option chosen was not the least costly nor the most effective from the standpoint of the overall community interest, but rather the one that might inflict a lesser cost, or pose a lesser threat to the particular interests of the major actors. That is, although the equalization of educational opportunity throughout the Province as a social objective has been given public endorsement by the government officials, trustees, and teachers, it is possible that they would differ in their respective preferences as to how this goal should

be brought about. Hence they are motivated to find some mutually accommodating strategy, even though it might involve inefficient and costly resource allocations.

It is possible that such decision dynamics provide an explanation for the particular mechanisms through which equalization of skill throughout the province has been taking place. It is our suggestion that the process through which equalization is being approached is a continuous though fairly gradual flooding of the market with higher qualifed candidates. This approach is possible because all major actors, admittedly with unequal degrees of committment and enthusiasm, can support as a goal the presence of better qualifed teachers in every classroom and also endorse as being worthy, decisions of individual students of education to complete one or two additional years at university before going into the job market. This latter possibility would naturally be especially well received by the universities, and particularly by the two Colleges of Education. Endorsement by universities has a particular tactical utility exactly because they are not actual participants in the collective bargaining system and yet are influential centers of information and attitude dissemination, and hence will predictably make use of opportunities to further their particular interests. Especially at the present time the Saskatchewan universities are understandably anxious to justify recent massive expansions in physical plant, and concomitant program and staffing expansions, since these institutions are faced with sizeable decreases in student enrolment at the primary and secondary school level.

A simpler, and more direct approach to skill equalization along the lines of traditional staffing mechanisms would presumably have recommended a wage system that allowed the less attractive locations to offer compensatory premiums in wage and non-wage components of the employment bargain as well as a system of provincial grants through which such an approach could be financed. Admittedly such a two-dimensional strategy would involve sufficient design and procedural complexities to risk the charge that it would be administratively inelegant but even more to the point, it would conflict with the existing commitment to a single salary scale and also would likely raise charges of a disciminatory grants policy from the larger population centers.

The skill equalization that is taking place is apparently being accomplished by accepting higher enrolments and graduating more teachers than the market can easily absorb and, at the same time, by instituting policies and programs which ensure that the skill-ratio of the graduating population is higher than the skill-ratio of the teaching population presently

employed. The resulting surplus of teachers will bring about an increasing willingness on the part of the more highly qualified job candidates to move into less desirable areas. Hence one would expect that there would be a mutually supported drive to dry up the supply of Class Two teachers who will be replaced by Class Three teachers; and eventually there will presumably be moves to dry up the supply of Class Three teachers who will be replaced by Class Three teachers; and eventually there will presumably be moves to dry up the supply of Class Three teachers who will be replaced by Class Four teachers. This approach would have the effect of bringing about the condition of formal equality in teacher credentials throughout all the regions of the province.

It would appear, however, that as a consequence of this approach various sorts of costs would be imposed on the community. The training of more young people than can be absorbed in this specialized market would seem to create a situation in which there existed graduates whose educational investment could not be fully realized and who would therefore be individually penalized. The public, which foots the bill for the public education system on the one hand, and subsidizes in an amount of approximately seventy percent of the total cost of education at the university level on the other hand, would be penalized by such inefficiencies as long as the system continued in a condition of market imbalance. And of course there might occur significant costs of other sorts if unemployed graduates encounter difficulties finding appropriate alternative positions in the labour market. Also, since this strategy approaches the objective of wide distribution of skilled teachers almost as an accidential offshoot of a university level recruitment and training policy, the question is never asked as to whether, within a cost-gains context, the universal distribution of this higher level of skill gives the best return on the community's educational investment. It should also be pointed out that even under a near universal distribution of Class Four teachers the realities of the relative attractiveness or unattractiveness of job openings would presumably result in differential selection based on residual personal factors such as individual competence and enthusiasm. Hence, from among the higher skill classifications those who were judged to be 'better' would go to the preferred open positions thereby, at least to some extent, creating a different sort of uneven distribution which would be based on personal attributes rather than formal credentials.

To really confront the stated objective of equal distribution of skills government policy would necessarily have to identify and respond to all the factors, wage and non-wage, that make up the total employment package. The present rigidities entailed in a centrally-bargained single wage scale still allows to the local boards some room for strategic maneuvering in respect

of such possible non-wage items as housing and travel subsidies, education and sabbatical leave, and other benefits that might be developed to compensate for the relatively greater degree of geographical and social isolation which makes certain positions relatively less attractive. As yet there is no basis for knowing the extent to which school boards can and desire to expand and exploit the bargaining potential of these local issues.

To achieve a more uniform distribution of teacher excellence, which would necessarily include skill level and other less formal, less tangible factors, differentials in various kinds of benefits and allowances would presumably have to be developed and supported to compensate for perceived disadvantaged geographical and social factors. It is questionable whether, under the current bargaining system either provincial government policy or the intra-organizational power relations within the S.T.F. would be able to devise and then tolerate terms and conditions of employment that could be differentially administered so as to place the less desirable, more isolated units in positions of approximate equality with larger urban centers in the teacher market. Hence from the standpoint of the total configuration of factors that result in teaching excellence in the classroom, there is little reason to believe that, under present circumstances and arrangements, the advantageous position of the more urbanized centers will cease to exist.

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L'égalité des chances en éducation et la répartition géographique des licenciés dans l'enseignement en Saskatchewan

L'objet de cette étude est l'examen des tendances historiques dans la répartition des compétences en éducation en Saskatchewan entre 1957 et 1974 à la lumière de certains changements dans l'organisation socio-économique entourant l'engagement des enseignants qui se produisit durant cette période. Après une analyse de ces changements, trois hypothèses ont été mises de l'avant pour expliquer la contraction qu'on y observa dans les écarts régionaux de la répartition des compétences en éducation. Ces hypothèses sont les suivantes: 1. l'hypothèse de la structure des négociations; 2. l'hypothèse de capacité de payer; 3. l'hypothèse de l'accroissement du surplus d'enseignants.

L'hypothèse de la structure des négociations indique que, plus la structure des négociations devient centralisée, plus la répartition des compétences en éducation s'égalise quand on la compare au rapport entre l'ensemble des enseignants et le nombre des enseignants licenciés. Ceci signifie que, si la négociation collective se poursuivait au niveau local, les commissions scolaires fortunées seraient en mesure d'offrir des traitements plus élevés aux enseignants que les commissions scolaires moins riches. Ceci créerait un partage inégal des compétences entre les différentes commissions scolaires. D'autre part, la négociation centralisée au niveau provincial contribuerait probablement à un partage plus uniforme des enseignants licenciés parce qu'une telle négociation entraînerait une échelle uniforme des salaires, ce qui aurait pour effet de limiter la possibilité pour les commissions scolaires fortunées d'acquérir un personnel enseignant plus qualifié en établissant et en offrant des taux de salaires particulièrement attrayants.

La capacité de payer se fonde sur les motifs suivants. Même si les échelles de salaires sont normalisées, il est du ressort des commissions scolaires prises individuellement de fixer le nombre d'enseignants licenciés qu'on peut engager pour une année donnée. Les enseignants licenciés touchent un traitement substantiellement plus élevé que les non-licenciés. En conséquence, étant donné l'empressement plus ou moins uniforme des diverses commissions scolaires à engager des enseignants licenciés, la capacité de payer des commissions scolaires prises individuellement déterminera dans une large mesure la demande d'enseignants licenciés, d'où l'observation d'une tendance au resserrement des écarts régionaux dans la répartition des compétences en éducation, ce qui peut être tout simplement la reflexivité d'écarts qui se rétrécissent dans la capacité de payer des commissions scolaires.

La troisième hypothèse indique qu'une augmentation de l'offre chez les enseignants licenciés tend à établir une répartition plus égale des enseignants licenciés entre les différentes commissions scolaires. Cette hypothèse confirme qu'une échelle uniforme des salaires ne se traduit pas nécessairement par une répartition uniforme des enseignants licenciés dans toute la province à cause de l'existence d'une préférence régionale qui s'exprime dans un choix favorisant les commissions scolaires urbaines au détriment des commissions scolaires rurales. Cette constatation fait ressortir que, lorsque l'offre d'enseignants licenciés est limitée, tous les enseignants licenciés, s'ils le désirent, peuvent être engagés par les commissions scolaires qu'ils préfèrent, créant ainsi une répartition faussée des enseignants licen-

ciés. Lorsque l'offre d'enseignants licenciés s'accroît, l'attirance marginale vers les commissions scolaires qu'ils préféraient antérieurement commence à décliner, d'où il peut y avoir un excédent d'enseignants licenciés dans les régions moins recherchées, ce qui crée une répartition plus égale.

Ces trois hypothèses furent vérifiées en regard d'un ensemble de séries chronologiques tirées de différents régistres conservés au ministère de l'Éducation de la Saskatchewan. Ces recherches laissent sous-entendre que l'hypothèse de l'augmentation du surplus d'enseignants fournit l'explication la plus satisfaisante, quoique les données pour les dernières années favorisent l'hypothèse de la capacité de payer. D'autre part, l'analyse empirique n'apporte pas un appui très fort à l'hypothèse de la structure des négociations. Une structure de négociations de plus en plus centralisée, tout en étant efficace en ce qui a trait à la normalisation des échelles de salaires, ne semble pas être d'un poids très important sur l'égalisation du partage des compétences dans le secteur de l'éducation.

Pour ce qui est de 1974, la répartition des enseignants licenciés était loin d'être uniforme. Les écarts entre le milieu urbain et le milieu rural étaient encore très marqués. Afin d'en arriver à une répartition plus uniforme des compétences en éducation, on peut concevoir deux possibilités: 1. continuer à accroître l'offre d'enseignants licenciés, même au point de créer un surplus; 2. imaginer un système de compensation par lequel les facteurs géographiques désavantageux qu'on perçoit soient corrigés en offrant plus d'avantages et d'allocations. Bien que cette dernière mesure soit probablement la plus désirable du point de vue d'une allocation efficace des ressources et que, en conséquence, elle en minimise le coût pour la collectivité, il est douteux que les principaux acteurs du système de négociations collectives, le ministère de l'Éducation, l'Association des commissaires d'écoles de la Saskatchewan et la Fédération des enseignants de la Saskatchewan, soient prêts et en mesure d'inventer et, ensuite, de supporter un tel système d'écarts dans les salaires parce que l'uniformité des échelles de salaires à la grandeur de la province a été retenue comme la priorité fondamentale de la part de la Fédération des enseignants et qu'elle offre aussi un avantage politique considérable au gouvernement de la Saskatchewan.